# Revised syllabus of

#### Workshop Calculation & Science (WCS)

for 81 Engineering Trades

Please note that this syllabus is effective from 2021-22 session.

This syllabus is merged with Trade theory syllabus and will be assessed as a part of Trade Theory CBT.

#### List of Revised Syllabus of Workshop Calculation & Science (Engineering Trades)

Sl. No.	Name of Trade (NSQF Level)	Duration in Year	Revised Hours 1st	Revised Hours 2nd	
			Year (Earlier 80 hrs.)	Year (Earlier 80 hrs.)	
1.	Additive Manufacturing Technician (3D Printing) (NSQF Level - 4)	1	38	-	
2.	Advanced CNC Machining Tech.(NSQF Level - 5)	2	38	34	
3.	Aeronautical Structure and Equipment Fitter (NSQF Level - 5)	2	40	22	
4.	Architectural Draughtsman (NSQF Level - 5)	2	40	36	
5.	Attendant Operator (Chemical Plant) (NSQF Level - 5)	2	38	18	
6.	Basic Designer and Virtual Verifier (Mechanical) (NSQF Level - 5)	2	22	24	
7.	Carpenter (NSQF Level - 4)	1	26	-	
8.	Central Air Condition Plant Mechanic (NSQF Level - 5)	2	40	34	
9.	Civil Engineering Assistant (NSQF Level - 5)	2	40	38	
10.	Draughtsman (Civil) (NSQF Level - 5)	2	40	40	
11.	Draughtsman Mechanical (NSQF Level - 5)	2	34	24	
12.	Domestic Painter (NSQF Level - 4)	1	18	-	
13.	Electrician (NSQF Level - 5)	2	30	32	
14.	Electrician-Power Distribution (NSQF Level - 5)	2	40	34	
15.	Electronics Mechanic (NSQF Level - 5)	2	35	16	
16.	Electroplater (NSQF Level - 5)	2	40	22	
17.	Fitter (NSQF Level - 5)	2	38	28	
18.	Foundryman (NSQF Level - 4)	1	36	-	
19.	Information and Communication Technology System Maintenance (NSQF Level - 5)	2	30	24	
20.	Instrument Mechanic (Chemical Plant) (NSQF Level - 5)	2	38	18	

Sl. No.	Name of Trade (NSQF Level)	Duration in Year	Revised Hours 1st Year (Earlier 80 hrs.)	Revised Hours 2nd Year (Earlier 80 hrs.)
21.	Industrial Painter (NSQF Level - 4)	1	30	-
22.	Industrial Robotics & Digital Manufacturing Tech. (NSQF Level - 4)	1	40	-
23.	Information Technology (NSQF Level - 5)	2	24	24
24.	Instrument Mechanic (NSQF Level - 5)	2	38	18
25.	In-Plant Logistics Assistant (NSQF Level - 4)	1	34	-
26.	Interior Design and Decoration (NSQF Level - 4)	1	32	-
27.	Laboratory Assistant (Chemical Plant) (NSQF Level - 5)	2	28	18
28.	Lift and Escalator Mechanic (NSQF Level - 5)	2	38	32
29.	Mechanic Agricultural Machinery (NSQF Level - 5)	2	36	16
30.	Machinist Grinder (NSQF Level - 5)	2	36	38
31.	Machinist (NSQF Level - 5)	2	36	38
32.	Maintenance Mechanic (Chemical Plant) (NSQF Level - 5)	2	30	12
33.	Manufacturing Process Control and Automation (NSQF Level - 4)	1	36	-
34.	Marine Engine Fitter (NSQF Level - 4)	1	30	-
35.	Marine Fitter (NSQF Level - 5)	2	38	22
36.	Mason (Building Constructor) (NSQF Level - 3)	1	36	-
37.	Mechanic Auto Body Paint Repair (NSQF Level - 4)	1	40	-
38.	Mechanic Auto Body Repair (NSQF Level - 4)	1	40	-
39.	Mechanic Auto Electrical and Electronics (NSQF Level - 4)	1	40	-
40.	Mechanic Consumer Electronic Appliances (NSQF Level - 5)	2	35	16
41.	Mechanic Electric Vehicle (NSQF Level - 4)	2	40	26

SI. No.	Name of Trade (NSQF Level)	Duration in Year	Revised Hours 1st Year (Earlier 80 hrs.)	Revised Hours 2nd Year (Earlier 80 hrs.)
42.	Mechanic Diesel (NSQF Level - 4)	1	40	-
43.	Mechanic Lens/ Prism Grinding (NSQF Level - 4)	1	32	-
44.	Mechanic Motor Vehicle (NSQF Level - 5)	2	40	34
45.	Mechanic Machine Tool Maintenance (NSQF Level - 5)	2	36	36
46.	Mechanic Mining Machinery (NSQF Level - 5)	2	34	30
47.	Mechanic Tractor (NSQF Level - 4)	1	40	-
48.	Mechanic Two and Three-Wheeler (NSQF Level - 4)	1	28	-
49.	Operator Advanced Machine Tool (NSQF Level - 5)	2	36	36
50.	Painter (General) (NSQF Level - 5)	2	18	30
51.	Plastic Processing Operator (NSQF Level - 4)	1	30	-
52.	Plumber (NSQF Level - 4)	1	32	-
53.	Pump Operator cum Mechanic (NSQF Level - 4)	1	38	-
54.	Refractory Technician (NSQF Level - 5)	2	38	28
55.	Refrigeration and Air Conditioning Technician (NSQF Level - 5)	2	38	40
56.	Rubber Technician (NSQF Level - 4)	1	38	-
57.	Sheet Metal Worker (NSQF Level - 3)	1	38	-
58.	Solar Technician (Electrical) (NSQF Level - 4)	1	36	-
59.	Spinning Technician (NSQF Level - 5)	2	20	26
60.	Stone Processing Machine Operator (NSQF Level - 4)	1	34	-
61.	Stone Mining Machine Operator (NSQF Level - 4)	1	32	-
62.	Surveyor (NSQF Level - 5)	2	40	40

Sl. No.	Name of Trade (NSQF Level)	Duration in Year	Revised Hours 1st Year (Earlier 80 hrs.)	Revised Hours 2nd Year (Earlier 80 hrs.)
63.	Tool & Die Maker (Dies & Moulds) (NSQF Level - 5)	2	40	34
64.	Tool & Die Maker (Press Tools, Jigs & Fixtures) (NSQF Level - 5)	2	40	34
65.	Tech. Electronics System Design & Repair (NSQF Level-5)	2	28	16
66.	Technician Medical Electronics (NSQF Level - 5)	2	36	20
67.	Technician Mechatronics (NSQF Level - 5)	2	36	16
68.	Technician Power Electronics Systems (NSQF Level - 5)	2	34	16
69.	Textile Mechatronics (NSQF Level - 5)	2	36	16
70.	Textile Wet Processing Technician (NSQF Level - 5)	2	30	18
71.	Turner (NSQF Level - 5)	2	40	34
72.	Vessel Navigator (NSQF Level - 5)	2	30	18
73.	Warehouse Technician (NSQF Level - 4)	1	40	-
74.	Welder (NSQF Level - 4)	1	38	-
75.	Welder (GMAW & GTAW) (NSQF Level - 3)	1	38	-
76.	Welder (Pipe) (NSQF Level - 3)	1	38	-
77.	Welder (Structural) (NSQF Level - 3)	1	38	-
78.	Welder (Fabrication & Fitting) (NSQF Level - 3)	1	38	-
79.	Welder (Welding & Inspection) (NSQF Level - 3)	1	38	-
80.	Weaving Technician (NSQF Level - 5)	2	24	28
81.	Wireman (NSQF Level - 4)	2	30	28

### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : ADDITIVE MANUFACTURING TECHNICIAN (3D PRINTING)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

Percentage	36-38	1.2.13	Retained		
Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Material Science				6	
Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Deleted		Types of plastics and its properties (warpage& shrinkage)
Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
Introduction of iron and cast iron	45-47	1.3.17	Deleted		
Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
Mass, Weight, Volume and Density				2	
Mass, volume, density, weight and specific gravity	53-54	1.4.20			
Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
Speed and Velocity, Work, Power and Energy				0	
Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
Heat & Temperature and Pressure				6	
	Percentage - Changing percentage to decimal and fraction  Material Science  Types metals, types of ferrous and non ferrous metals  Physical and mechanical properties of metals  Introduction of iron and cast iron  Difference between iron & steel, alloy steel and carbon steel  Properties and uses of rubber, timber and insulating materials  Mass, Weight, Volume and Density  Mass, volume, density, weight and specific gravity  Related problems for mass, volume, density, weight and specific gravity  Speed and Velocity, Work, Power and Energy  Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation  Speed and velocity - Related problems on speed & velocity  Work, power, energy, HP, IHP, BHP and efficiency  Potential energy, kinetic energy and related problems with assignment	Percentage - Changing percentage to decimal and fraction  Material Science  Types metals, types of ferrous and non ferrous metals  40 -41  Physical and mechanical properties of metals  Introduction of iron and cast iron  Difference between iron & steel, alloy steel and carbon steel  Properties and uses of rubber, timber and insulating materials  Mass, Weight, Volume and Density  Mass, volume, density, weight and specific gravity  Speed and Velocity, Work, Power and Energy  Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation  Speed and velocity - Related problems on speed & velocity  Work, power, energy, HP, IHP, BHP and efficiency  Potential energy, kinetic energy and related problems with assignment  72-73	Percentage - Changing percentage to decimal and fraction 39 1.2.14  Material Science  Types metals, types of ferrous and non ferrous metals 40 -41 1.3.15  Physical and mechanical properties of metals 42-44 1.3.16  Introduction of iron and cast iron 45-47 1.3.17  Difference between iron & steel, alloy steel and carbon steel 48-49 1.3.18  Properties and uses of rubber, timber and insulating materials 50-52 1.3.19  Mass, Weight, Volume and Density  Mass, volume, density, weight and specific gravity 53-54 1.4.20  Related problems for mass, volume, density, weight and specific gravity 55-60 1.4.21  Speed and Velocity, Work, Power and Energy  Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation  Speed and velocity - Related problems on speed & velocity 65-68 1.5.23  Work, power, energy, HP, HHP, BHP and efficiency 69-71 1.5.24  Potential energy, kinetic energy and related problems with assignment 72-73 1.5.25	Percentage - Changing percentage to decimal and fraction 39 1.2.14 Retained  Material Science  Types metals, types of ferrous and non-ferrous metals 40-41 1.3.15 Deleted  Physical and mechanical properties of metals 42-44 1.3.16 Deleted  Introduction of iron and cast iron 45-47 1.3.17 Deleted  Difference between iron & steel, alloy steel and carbon steel 48-49 1.3.18 Deleted  Properties and uses of rubber, timber and insulating materials 50-52 1.3.19 Deleted  Mass, Weight, Volume and Density  Mass, volume, density, weight and specific gravity 53-54 1.4.20  Related problems for mass, volume, density, weight and specific gravity 55-60 1.4.21 Deleted  Speed and Velocity, Work, Power and Energy  Speed and velocity, Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation  Speed and velocity Related problems on speed & velocity 65-68 1.5.23 Deleted  Work, power, energy, HP, HHP, BHP and efficiency 69-71 1.5.24 Deleted  Potential energy, kinetic energy and related problems with assignment 72-73 1.5.25 Deleted	Percentage - Changing percentage to decimal and fraction  Material Science  Types metals, types of ferrous and non ferrous metals  40-41  1.3.15  Deleted  Physical and mechanical properties of metals  Introduction of iron and cast iron  Difference between iron & steel, alloy steel and carbon steel  Properties and uses of rubber, timber and insulating materials  Mass, Weight, Volume and Density  Mass, volume, density, weight and specific gravity  Related problems for mass, volume, density, weight and specific gravity  Speed and Velocity, Work, Power and Energy  Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation  Speed and velocity - Related problems on speed & velocity  Work, power, energy, HP, HHP, BHP and efficiency  Potential energy, kinetic energy and related problems with assignment  72-73  1.5.25  Deleted

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				0	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Deleted		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				10	

1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
Х	Trigonometry				4	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL RE	VISED HOURS	38	

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES

#### NAME OF TRADE: ADVANCED CNC MACHINING TECHNICIAN (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		Only direct problems
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		

7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		
IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
V	Speed and Velocity, Work, Power and Energy				2	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		Definition only
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Retained		
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		

2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Partially retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Partially retained		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				8	

1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
Х	Trigonometry					
1	Measurement of angles	154-155	1.10.46	Retained	4	
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL RI	EVISED	38	

#### **REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES**

#### NAME OF TRADE: ADVANCED CNC MACHINING TECHNICIAN (2nd Year)

Sr. No.	Title of the Exercise	Page No.	Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	Friction				6	
1	Friction - Advantages and disadvantages, Laws of friction, coefficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		Not to be taught in detail
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Retained		
II	Centre of Gravity				4	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
III	Area of cut out regular surfaces and area of irregular surfaces				8	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Retained		
IV	Algebra				0	Already covered in 1st year
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Deleted		

2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Deleted		
٧	Elasticity				8	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	Heat Treatment				2	
1	Heat treatment and advantages	56-57	2.6.12	Retained		Only overview required
2	Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Retained		Only overview required
VII	Profit and Loss				0	
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
VIII	Estimation and Costing				6	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		34	

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : AERONAUTICAL STRUCTURE AND EQUIPMENT FITTER (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
1	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
5	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
I	Square root, Ratio and Proportions, Percentage				4	
L	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		Only direct solving problems
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
ļ	Ratio and proportion	30-31	1.2.11	Retained		
	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	Speed and Velocity, Work, Power and Energy				2	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				4	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	Basic Electricity				6	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		

VIII	Mensuration				6	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				2	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Retained		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
Х	Trigonometry				4	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		40	

### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : AERONAUTICAL STRUCTURE AND EQUIPMENT FITTER (2nd Year)

Sr.	Title of the Exercise	NIMI	NIMI	To be Retained	Revised	Remarks/
No.		Books' Page No.	Books' Exercise No.	/ Not retained	Hours	Justification
ı	Friction				6	
1	Friction - Advantages and disadvantages, Laws of friction, coefficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		Not to be taught in detail
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Retained		
II	Centre of Gravity				4	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
III	Area of cut out regular surfaces and area of irregular surfaces				4	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		
IV	Algebra				0	

2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Deleted		
٧	Elasticity				2	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	Heat Treatment				0	
1	Heat treatment and advantages	56-57	2.6.12	Deleted		Only intro as covered in theory
2	Heat treatment - Different heat treatment process - Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Deleted		Only intro as covered in theory
VII	Profit and Loss				0	
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
VIII	Estimation and Costing				6	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		22	

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : ARCHITECTURAL DRAUGHTSMAN (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		

4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Partially retained		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
٧	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		

2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				6	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				0	

1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Deleted		
2	Conductor, insulator, types of connections—series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				8	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				0	

1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
X	Trigonometry				6	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Retained		
			TOTAL REV	ISED HOURS	40	

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : ARCHITECTURAL DRAUGHTSMAN (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	Friction				0	
1	Friction - Advantages and disadvantages, Laws of friction, coefficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Deleted		
2	Friction - Lubrication	811	2.1.02	Deleted		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Deleted		
II	Centre of Gravity				6	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
Ш	Area of cut out regular surfaces and area of irregular surfaces				8	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Retained		
IV	Algebra				6	

1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
V	Elasticity				4	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	Heat Treatment				0	
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
2	Heat treatment - Different heat treatment process - Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Deleted		
VII	Profit and Loss				4	
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Retained		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Retained		
VIII	Estimation and Costing				8	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL RE	VISED HOURS	36	

### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : ATTENDANT OPERATOR (CHEMICAL PLANT) (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		

4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
٧	Speed and Velocity, Work, Power and Energy				8	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		

2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				6	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	Basic Electricity				4	

1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		Only basics to be taught
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		Only basics to be taught
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		Only basics to be taught
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		Only basics to be taught
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		Only basics to be taught
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		Only basics to be taught
VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids—cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
	Finding the lateral surface area, total surface area and	145-147	1.8.43	Deleted		
5	capacity in litres of hexagonal, conical and cylindrical shaped vessels					
IX	Levers and Simple machines				0	

1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
Х	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Deleted		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL RE	VISED HOURS	38	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : ATTENDANT OPERATOR (CHEMICAL PLANT) ( 2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	Friction				2	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		Should be taught in 1st Year with basics
2	Friction - Lubrication	811	2.1.02	Retained		Should be taught in 1st Year with basics
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Retained		Should be taught in 1st Year with basics
II	Centre of Gravity				0	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Deleted		
III	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		
IV	Algebra				6	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		

2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
V	Elasticity				0	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Deleted		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
VI	Heat Treatment				0	
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
2	Heat treatment - Different heat treatment process - Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Deleted		
VII	Profit and Loss				0	
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
VIII	Estimation and Costing				10	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16			
2	Estimation and costing - Problems on estimation and costing	92	2.8.17			
			TOTAL REV	/ISED HOURS	18	

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: BASIC DESIGNER AND VIRTUAL VERIFIER (MECHANICAL) (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks /Justification
l	Unit, Fractions				4	
L	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
5	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
I	Square root, Ratio and Proportions, Percentage				6	
l	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
ļ	Ratio and proportion	30-31	1.2.11	Retained		

5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				0	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Deleted		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
V	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity—Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		

4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				0	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				0	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Deleted		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		

3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted	
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted	
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted	
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted	
VIII	Mensuration				10
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained	
2	Area and perimeter of Triangles	125-129	1.8.40	Retained	
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained	
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained	
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained	
IX	Levers and Simple machines				0
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted	
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted	
Х	Trigonometry				
1	Measurement of angles	154-155	1.10.46	Retained	

2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		22	

### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : BASIC DESIGNER AND VIRTUAL VERIFIER (MECHANICAL) (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
ı	Friction				6	
1	Friction - Advantages and disadvantages, Laws of friction, coefficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Retained		
II	Centre of Gravity				4	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
Ш	Area of cut out regular surfaces and area of irregular surfaces				8	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Retained		
IV	Algebra				0	

1	Algebra - Addition, subtraction, multiplication & division	3235	2.4.08	Deleted		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Deleted		
٧	Elasticity				0	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Deleted		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
VI	Heat Treatment				0	
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
2	Heat treatment - Different heat treatment process - Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Deleted		
VII	Profit and Loss				0	
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
VIII	Estimation and Costing				6	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		24	

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : CARPENTER

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks /Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage					
1	Square and square root	27	1.2.08	Retained	6	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Partially deleted		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity.	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	Speed and Velocity, Work, Power and Energy			Deleted	0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				0	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Deleted		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				0	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Deleted		
2	Conductor, insulator, types of connections – series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		

46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				6	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
Х	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Deleted		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REV	/ISED HOURS	26	

### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : CENTRAL AC PLANT MECHANIC (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		Only Direct problem solving
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties <del>and uses of rubber, timber and</del> insulating materials	50-52	1.3.19	Partially retained		Covered in theory
IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity, numerical related to L,C,O section only	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	Speed and Velocity, Work, Power and Energy				2	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				12	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Retained		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	Basic Electricity				4	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		

VIII	Mensuration				4	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
Х	Trigonometry				0	
1	Measurement of angles	154-155	1.10.46	Deleted		
2	Trigonometrical ratios	156-161	1.10.47	Deleted		
3	Trigonometrical tables	162-172	1.10.48	Deleted		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL RI HOURS	TOTAL REVISED HOURS		

### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : CENTRAL AC PLANT MECHANIC (2nd Year)

Sr.	Title of the Exercise	Page	Exercise	To be Retained	Revised	Remarks/
No.		No.	No.	/ Not retained	Hours	Justification
ı	Friction				4	
1	Friction - Advantages and disadvantages, Laws of friction, coefficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Retained		
II	Centre of Gravity				4	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
III	Area of cut out regular surfaces and area of irregular surfaces				6	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Retained		
IV	Algebra				0	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Deleted		

2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Deleted		
V	Elasticity				8	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	Heat Treatment				6	
1	Heat treatment and advantages	56-57	2.6.12	Retained		
2	Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Retained		Only definitions
VII	Profit and Loss				0	
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
VIII	Estimation and Costing				6	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92-95	2.8.17	Retained		
			TOTAL RE	VISED HOURS	34	

### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : CIVIL ENGINEERING ASSISTANT (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and <del>uses of rubber,</del> timber <del>and insulating materials</del>	50-52	1.3.19	Partially retained		
IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
V	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				6	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				6	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		

VIII	Mensuration				6	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
Х	Trigonometry				4	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Retained		
			TOTAL REV	/ISED HOURS	40	

### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : CIVIL ENGINEERING ASSISTANT (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained		Remarks/ Justification
I	Friction				0	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Deleted		
2	Friction - Lubrication	811	2.1.02	Deleted		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Deleted		
II	Centre of Gravity				6	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
III	Area of cut out regular surfaces and area of irregular surfaces				10	

1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Retained	
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Retained	
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Retained	
IV	Algebra				6
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained	
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained	
V	Elasticity				4
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained	
VI	Heat Treatment				0
1	Heat treatment and advantages	56-57	2.6.12	Deleted	

2	Simple estimation of the requirement of material etc., as applicable to the trade  Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
	requirement of material etc., as					
1	Estimation and costing -	85-91	2.8.16	Retained		
VIII	Estimation and Costing				8	
2	Profit and loss - Simple and compound interest	7384	2.7.15	Retained		
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Retained		
VII	Profit and Loss				4	
	Hardening, tempering, annealing, normalising and case hardening					
2	Heat treatment - Different heat treatment process -	5866	2.6.13	Deleted		

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : DOMESTIC PAINTER

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage					
1	Square and square root	27	1.2.08	Retained	6	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		

7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				0	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Deleted		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	Mass, Weight, Volume and Density				0	
1	Mass, volume, density, weight and specific gravity.	53-54	1.4.20	Deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
V	Speed and Velocity, Work, Power and Energy			Deleted	0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				0	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Deleted		

2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				0	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Deleted		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				6	

1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
Х	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVI	SED HOURS	18	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : DRAUGHTSMAN (CIVIL) (1st Year)

		Books' Page No.	Books' Exercise No.	Retained / Deleted	Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and <del>uses of rubber,</del> timber <del>and insulating materials</del>	50-52	1.3.19	Partially retained		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
V	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				6	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				0	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Deleted		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				8	

2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
Х	Trigonometry				6	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Retained		
			TOTAL REV	/ISED HOURS	40	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : DRAUGHTSMAN (CIVIL) (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	Friction				0	
1	Friction - Advantages and disadvantages, Laws of friction, coefficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Deleted		
2	Friction - Lubrication	811	2.1.02	Deleted		
3	Friction Co efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Deleted		
II	Centre of Gravity				6	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
III	Area of cut out regular surfaces and area of irregular surfaces				10	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Retained		
IV	Algebra				6	

1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
V	Elasticity				4	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	Heat Treatment				0	
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
2	Heat treatment - Different heat treatment process - Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Deleted		
VII	Profit and Loss				4	
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Retained		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Retained		
VIII	Estimation and Costing				10	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL R HOURS	TOTAL REVISED HOURS		

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : DRAUGHTSMAN (MECHANICAL) (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		
IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20			
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
V	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				6	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				0	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Deleted		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		

46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				10	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
Х	Trigonometry					
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVISI	ED HOURS	34	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : DRAUGHTSMAN (MECHANICAL) (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	Friction				6	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Retained		
II	Centre of Gravity				4	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
III	Area of cut out regular surfaces and area of irregular surfaces				8	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Retained		
IV	Algebra				0	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Deleted		

2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Deleted		
٧	Elasticity				0	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and	41-52	2.5.10	Deleted		
	<del>young's modulus</del>					
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
VI	Heat Treatment				0	
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
2	Heat treatment – Different heat treatment process – Hardening,	5866	2.6.13	Deleted		
	tempering, annealing, normalising and case hardening					
VII	Profit and Loss				0	
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
VIII	Estimation and Costing				6	
1	Estimation and costing - Simple estimation of the requirement of	85-91	2.8.16	Retained		
	material etc., as applicable to the trade					
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL RE	VISED HOURS	24	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : ELECTRICIAN-POWER DISTRIBUTION (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				2	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		Covered in theory syllabus
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		Covered in theory syllabus
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		Covered in theory syllabus
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Partially deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	Speed and Velocity, Work, Power and Energy				4	
1	Speed and velocity Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		

4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Retained		
VI	Heat & Temperature and Pressure				5	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				6	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		

6	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				6	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines					
1	Simple machines – Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained	3	
Х	Trigonometry					
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REV	ISED HOURS	40	

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : ELECTRICIAN-POWER DISTRIBUTION (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	Friction				2	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Deleted		
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Deleted		
II	Centre of Gravity				6	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Deleted		
III	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		

			TOTAL REV	VISED HOURS	34	
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91		Retained		
1		85-91	2.8.16	Potained		
VIII	Estimation and Costing				10	
2	Profit and loss - Simple and compound interest	7384	2.7.15	Retained		
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Retained		
VII	Profit and Loss				4	
<del>-</del>	Hardening, tempering, annealing, normalising and case hardening			2 3.300		
2	Heat treatment - Different heat treatment process -	5866	2.6.13	Deleted		
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
VI	Heat Treatment				0	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
	units and young's modulus					
1	Elasticity - Elastic, plastic materials, stress, strain and their	41-52	2.5.10	Retained		
V	Elasticity				2	
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		
IV	Algebra				10	
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : ELECTRICIAN (1st Year)

Sr. No.	Title of the Exercise	NIMI Books'	NIMI Books'	To be Retained	Revised Hours	Remarks/ Justification
		Page No.	Exercis e No.	/ Not retained		
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	Material Science				2	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		Covered in theory syllabus
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		Covered in theory syllabus
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		Covered in theory syllabus
IV	Mass, Weight, Volume and Density				3	
1	Mass, volume, density, weight <del>and specific gravity</del>	53-54	1.4.20	Partially deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Retained		
VI	Heat & Temperature and Pressure				5	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				0	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Deleted		Already covered in theory
2	Conductor, insulator, types of connections - series and parallel	102- 107	1.7.34	Deleted		Already covered in theory
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		Already covered in theory
4	Electrical power, energy and their units, calculation with assignments	112- 114	1.7.36	Deleted		Already covered in theory
5	Magnetic induction, self and mutual inductance and EMF generation	115-	1.7.37	Deleted		Already covered in

46	Electrical power, HP, energy and units of electrical energy	118- 120	1.7.38	Deleted		Already covered in theory
VIII	Mensuration				7	
1	Area and perimeter of square, rectangle and parallelogram	121- 124	1.8.39	Retained		
2	Area and perimeter of Triangles	125- 129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130- 137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138- 144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145- 147	1.8.43	Deleted		
IX	Levers and Simple machines					
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148- 149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150- 153	1.9.45	Retained	3	
X	Trigonometry					
1	Measurement of angles	154- 155	1.10.4	Retained		
2	Trigonometrical ratios	156- 161	1.10.4 7	Retained		

3	Trigonometrical tables	162- 172	1.10.4 8	Retained		
4	Application in calculating height and distance (Simple applications)	173- 177	1.10.4 9	Deleted		
			TOTAL F HOURS	REVISED	30	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : ELECTRICIAN (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	Friction				2	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Deleted		
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co - efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Deleted		
II	Centre of Gravity				6	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Deleted		
III	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		
IV	Algebra				10	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		

2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
V	Elasticity				2	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity Ultimate stress and working stress	53-55	2.5.11	Deleted		
VI	Heat Treatment				0	
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
2	Heat treatment - Different heat treatment process - Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Deleted		
VII	Profit and Loss				4	
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Retained		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Retained		
VIII	Estimation and Costing				8	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REV	/ISED HOURS	32	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : ELECTRONICS MECHANIC (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		

5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Partially deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
V	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		

4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				12	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		

3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
Х	Trigonometry				3	

1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		35	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : ELECTRONICS MECHANIC (2nd Year)

Sr.	Title of the Exercise	NIMI	NIMI Books'	To be	Revised	Remarks/
No.		Books' Page No.	Exercise No.	Retained / Not retained	Hours	Justification
ı	Friction				0	
1	Friction - Advantages and disadvantages, Laws of friction, co- efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Deleted		
2	Friction - Lubrication	811	2.1.02	Deleted		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Deleted		
II	Centre of Gravity				0	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Deleted		
III	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		
IV	Algebra				8	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		

2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
V	Elasticity				0	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
VI	Heat Treatment				0	
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
2	Heat treatment — Different heat treatment process — Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Deleted		
VII	Profit and Loss				0	
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
VIII	Estimation and Costing				8	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVIS	SED HOURS	16	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : ELECTROPLATOR (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	Material Science				8	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Partially deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				4	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				6	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		

46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				6	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted	2	
Х	Trigonometry					
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL RE	VISED HOURS	40	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : ELECTROPLATOR ( 2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	Friction				0	
1	Friction - Advantages and disadvantages, Laws of friction, coefficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Deleted		
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Deleted		
Ш	Centre of Gravity				0	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Deleted		
III	Area of cut out regular surfaces and area of irregular surfaces				8	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		

IV	Algebra				0	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Deleted		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Deleted		
V	Elasticity				0	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
VI	Heat Treatment				0	
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
2	Heat treatment - Different heat treatment process — Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Deleted		
VII	Profit and Loss				4	
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Retained		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Retained		
VIII	Estimation and Costing				10	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		22	

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: FITTER (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		Only direct solving problems
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				0	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Deleted		Covered in theory
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		Covered in theory
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		Covered in theory
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		Covered in theory
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		Covered in theory
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
٧	Speed and Velocity, Work, Power and Energy				2	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		

2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat—Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				8	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		

			TOTAL REVI	SED HOURS	38	
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
3	Trigonometrical tables	162-172	1.10.48	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
1	Measurement of angles	154-155	1.10.46	Retained		
X	Trigonometry				6	
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Retained		
	Levers and Simple machines	140 140	1044	Datained	2	
5 <b>IX</b>	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained	2	
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : FITTER (2nd Year)

Sr.	Title of the Exercise	NIMI	NIMI	To be Retained	Revised	Remarks/ Justification
No.		Books'	Books'	/	Hours	
		Page	Exercise	Deleted		
		No.	No.			
ı	Friction				6	
1	Friction - Advantages and disadvantages, Laws of friction, co-	17	2.1.01	Retained		Not to be taught in detail
	efficient of friction, angle of friction, simple problems related to friction					
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of		2.1.03	Retained		
	friction in workshop practice	1213				
II	Centre of Gravity				4	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
III	Area of cut out regular surfaces and area of irregular surfaces				8	
1	Area of cut out regular surfaces - circle, segment and sector of	2426	2.3.05	Retained		
	circle					
2	Related problems of area of cut out regular surfaces - circle,	2728	2.3.06	Retained		
	segment and sector of circle					
3	Area of irregular surfaces and application related to shop	2931	2.3.07	Retained		
	problems					
IV	Algebra				0	

1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Deleted		Already covered in 1 st
						year
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Deleted		
٧	Elasticity				2	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	Heat Treatment				2	
1	Heat treatment and advantages	56-57	2.6.12	Retained		Only intro as covered in theory
2	Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Retained		Only intro as covered in theory
VII	Profit and Loss				0	
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
VIII	Estimation and Costing				6	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL RE	VISED HOURS	28	

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: FOUNDRYMAN

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		Only direct solving problems
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		

4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	Material Science				8	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Deleted		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
٧	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		

2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				12	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Retained		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	Basic Electricity				2	

1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		
2	Conductor, insulator, types of connections – series and parallel	102- 107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112- 114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115- 117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118- 120	1.7.38	Deleted		
VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121- 124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125- 129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130- 137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138- 144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145- 147	1.8.43	Deleted		

IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage,	148-	1.9.44	Deleted		
	velocity ratio, efficiency of machine, relationship between	149				
	efficiency, velocity ratio and mechanical advantage					
2	Lever & Simple machines - Lever and its types	150-	1.9.45	Deleted		
2		153				
Х	Trigonometry				0	
1	Measurement of angles	154-	1.10.46	Retained		
		155				
2	Trigonometrical ratios	156-	1.10.47	Retained		
2		161				
3	Trigonometrical tables	162-	1.10.48	Retained		
		172				
4	Application in calculating height and distance (Simple	173-	1.10.49	Deleted		
	<del>applications)</del>	177				
			TOTAL RE	VISED HOURS	36	

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: IN PLANT LOGISTICS ASSISTANT

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		

7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	Material Science				2	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Partially deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
٧	Speed and Velocity, Work, Power and Energy				2	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				0	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		

2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				12	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially deleted		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	Mensuration				6	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		

			TOTAL REVI	SED HOURS	34	
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
3	Trigonometrical tables	162-172	1.10.48	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
1	Measurement of angles	154-155	1.10.46	Retained		
Х	Trigonometry				0	
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
	efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage					
1	Simple machines - Effort and load, mechanical advantage, velocity ratio,	148-149	1.9.44	Deleted		
IX	Levers and Simple machines				0	
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: INDUSTRIAL PAINTER

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
5	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
I	Square root, Ratio and Proportions, Percentage					
1	Square and square root	27	1.2.08	Retained	6	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
1	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
5	Percentage	36-38	1.2.13	Retained		

7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	Material Science				8	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		
IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity.	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				0	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Deleted		

2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				0	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Deleted		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				4	

1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids – cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				2	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
Х	Trigonometry				4	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVI	SED HOURS	30	

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADES: INDUSTRIAL ROBOTICS & DIGITAL MANUFACTURING TECHNICIAN

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage					
1	Square and square root	27	1.2.08	Retained	6	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained Partially		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity, <b>numericals realted to sections L,C</b> O.	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	Speed and Velocity, Work, Power and Energy			Deleted	4	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				6	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained Partially		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Partially retained		
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained Partially		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				8	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		

3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
Х	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL RE HOURS	VISED	40	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: INFORMATION & COMMUNICATION TECHNOLOGY SYSTEM MAINTENANCE (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revise d Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
П	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		

5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Deleted		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	Mass, Weight, Volume and Density				0	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
٧	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Retained		
VI	Heat & Temperature and Pressure				0	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				12	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		

VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	Trigonometry				4	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL RE	VISED HOURS	30	

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: INFORMATION & COMMUNICATION TECHNOLOGY SYSTEM MAINTENANCE (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Friction				0	
1	Friction - Advantages and disadvantages, Laws of friction, co- efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Deleted		
2	Friction Lubrication	811	2.1.02	Deleted		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Deleted		
II	Centre of Gravity				0	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Deleted		
Ш	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		

IV	Algebra				8	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
V	Elasticity				0	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
VI	Heat Treatment				0	
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
2	Heat treatment - Different heat treatment process - Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Deleted		
VII	Profit and Loss				6	
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
VIII	Estimation and Costing				10	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		24	

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: INFORMATION & COMMUNICATION TECHNOLOGY SYSTEM MAINTENANCE (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		

5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				0	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Deleted		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	Mass, Weight, Volume and Density				0	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
V	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				0	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Deleted		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				10	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
6	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		

VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
Х	Trigonometry				4	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		24	

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: INFORMATION & COMMUNICATION TECHNOLOGY SYSTEM MAINTENANCE (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Friction				0	
1	Friction - Advantages and disadvantages, Laws of friction, co- efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Deleted		
2	Friction - Lubrication	811	2.1.02	Deleted		
3	Friction - Co - efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Deleted		
II	Centre of Gravity				0	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Deleted		
Ш	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		

		TOTAL REVISED HOURS			24	
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
VIII	Estimation and Costing				10	
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
VII	Profit and Loss				6	
	Hardening, tempering, annealing, normalising and case hardening					
2	Heat treatment - Different heat treatment process -	5866	2.6.13	Deleted		
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
VI	Heat Treatment				0	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
	units and young's modulus					
1	Elasticity - Elastic, plastic materials, stress, strain and their	41-52	2.5.10	Retained		
V	Elasticity				0	
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		
IV	Algebra				8	
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		

### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : INSTRUMENT MECHANIC (CHEMICAL PLANT) (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		

4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	Speed and Velocity, Work, Power and Energy				8	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		

2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				6	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and nonmetals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	Basic Electricity				4	

1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		Only basics to be taught
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		Only basics to be taught
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		Only basics to be taught
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		Only basics to be taught
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		Only basics to be taught
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		Only basics to be taught
VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		

IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and	148-149	1.9.44	Deleted		
2	mechanical advantage  Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
X	Trigonometry	130 133	1.5.45	Deleted	2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Deleted		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		38	

### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : INSTRUMENT MECHANIC (CHEMICAL PLANT) (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Friction				2	
1	Friction - Advantages and disadvantages, Laws of friction, coefficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Retained		
II	Centre of Gravity				0	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Deleted		
Ш	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		

IV	Algebra				6	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
V	Elasticity				0	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Deleted		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
VI	Heat Treatment				0	
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
2	Heat treatment - Different heat treatment process - Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Deleted		
VII	Profit and Loss				0	
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
VIII	Estimation and Costing				10	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16			
2	Estimation and costing - Problems on estimation and costing	92	2.8.17			
			TOTAL REVISED HOURS		18	

### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : INSTRUMENT MECHANIC (1st Year)

Sr.	Title of the Exercise	NIMI	NIMI	To be	Revised	Remarks/ Justification
No.		Books' Page No.	Books' Exercise No.	Retained / Deleted	Hours	
				Deleten		
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
٧	Speed and Velocity, Work, Power and Energy				8	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				6	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	Basic Electricity				4	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		Only basics to be taught
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		Only basics to be taught
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		Only basics to be taught
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		Only basics to be taught
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		Only basics to be taught

46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		Only basics to be taught
VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
Х	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Deleted		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		38	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : INSTRUMENT MECHANIC (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Friction				2	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		Should be taught in 1st Year with basics
2	Friction - Lubrication	811	2.1.02	Retained		Should be taught in 1st Year with basics
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Retained		Should be taught in 1st Year with basics
II	Centre of Gravity				0	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Deleted		
III	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		

2	Estimation and costing - Problems on estimation and costing	92	2.8.17	VISED HOURS	18	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16			
VIII	Estimation and Costing				10	
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
VII	Profit and Loss				0	
2	Hardening, tempering, annealing, normalising and case hardening	5800	2.0.13	Deleted		
2	Heat treatment - Different heat treatment process -	56-57 5866	2.6.12	Deleted Deleted		
VI	Heat Treatment				0	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Deleted		
٧	Elasticity				0	
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		
IV	Algebra				6	
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: INTERIOR DESIGN & DECORATION

Sr.	Title of the Exercise	NIMI	NIMI	To be	Revised	Remarks/
No.		Books' Page No.	Books' Exercise No.	Retained / Deleted	Hours	Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage					
1	Square and square root	27	1.2.08	Retained	6	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		
IV	Mass, Weight, Volume and Density				0	
1	Mass, volume, density, weight and specific gravity.	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
٧	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				0	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Deleted		

2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				6	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained Partially		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
6	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				8	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		

			TOTAL REV	/ISED HOURS	32	
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
3	Trigonometrical tables	162-172	1.10.48	Deleted		
2	Trigonometrical ratios	156-161	1.10.47	Deleted		
1	Measurement of angles	154-155	1.10.46	Deleted		
X	Trigonometry				0	
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
	efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage					
1	Simple machines - Effort and load, mechanical advantage, velocity ratio,	148-149	1.9.44	Deleted		
IX	Levers and Simple machines				2	
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Partially deleted		
4	Surface area and volume of solids - cube, cuboid, <del>cylinder, sphere and hollow cylinder</del>	138-144	1.8.42	Partially deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: LABORATORY ASSISTANT (CHEMICAL PLANT) (1st Year)

Sr.	Title of the Exercise	NIMI	NIMI	To be	Revised	Remarks/ Justification
No.		Books'	Books'	Retained	Hours	
		Page No.	Exercise	/ Dubated		
			No.	Deleted		
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		

6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				6	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		

2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		

2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
Х	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Deleted		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		28	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: LABORATORY ASSISTANT (CHEMICAL PLANT) (2nd Year)

Sr.	Title of the Exercise	NIMI	NIMI	To be	Revised	Remarks/
No.		Books' Page No.	Books' Exercise	Retained / Deleted	Hours	Justification
			No.			
I	Friction				2	
1	Friction - Advantages and disadvantages, Laws of friction, co-	17	2.1.01	Retained		
	efficient of friction, angle of friction, simple problems related to friction					
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of		2.1.03	Retained		
	friction in workshop practice	1213				
II	Centre of Gravity				0	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Deleted		
III	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of	2426	2.3.05	Deleted		
	circle					
2	Related problems of area of cut out regular surfaces - circle,	2728	2.3.06	Deleted		
	segment and sector of circle					
3	Area of irregular surfaces and application related to shop	2931	2.3.07	Deleted		
	problems					
IV	Algebra				6	

			TOTAL REVISED HOURS		18	
2	Estimation and costing - Problems on estimation and costing	92	2.8.17			
	material etc., as applicable to the trade					
1	Estimation and costing - Simple estimation of the requirement of	85-91	2.8.16			
VIII	Estimation and Costing				10	
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
VII	Profit and Loss				0	
_	tempering, annealing, normalising and case hardening		1.0.20	2 0.000		
2	Heat treatment - Different heat treatment process - Hardening,	5866	2.6.13	Deleted		
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
VI	Heat Treatment				0	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
	and young's modulus					
1	Elasticity - Elastic, plastic materials, stress, strain and their units	41-52	2.5.10	Deleted		
٧	Elasticity				0	
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : Lift & Escalator Mechanic (1st Year)

Sr. No.	Title of the Exercise	Page No.	Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
5	Percentage	36-38	1.2.13	Retained		

7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				2	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Partially deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	Speed and Velocity, Work, Power and Energy				4	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Retained		
VI	Heat & Temperature and Pressure				0	

1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Deleted		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				10	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Deleted		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		

Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
Mensuration				6	
Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
Area and perimeter of Triangles	125-129	1.8.40	Retained		
Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
Levers and Simple machines				2	
Simple machines – Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
Trigonometry				0	
Measurement of angles	154-155	1.10.46	Deleted		
Trigonometrical ratios	156-161	1.10.47	Deleted		
Trigonometrical tables	162-172	1.10.48	Deleted		
Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
		TOTAL RE	TOTAL REVISED HOURS		
	Mensuration  Area and perimeter of square, rectangle and parallelogram  Area and perimeter of Triangles  Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse  Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder  Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels  Levers and Simple machines  Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage  Lever & Simple machines - Lever and its types  Trigonometry  Measurement of angles  Trigonometrical ratios  Trigonometrical tables	Mensuration  Area and perimeter of square, rectangle and parallelogram  Area and perimeter of Triangles  Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse  Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder  Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels  Levers and Simple machines  Simple machines — Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage  Lever & Simple machines - Lever and its types  Trigonometry  Measurement of angles  Trigonometrical ratios  Trigonometrical tables	Mensuration         Area and perimeter of square, rectangle and parallelogram       121-124       1.8.39         Area and perimeter of Triangles       125-129       1.8.40         Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse       130-137       1.8.41         Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder       138-144       1.8.42         Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels       145-147       1.8.43         Levers and Simple machines       Simple machines - Effort and load, mechanical advantage, velocity ratio and mechanical advantage       148-149       1.9.44         Trigonometrical advantage       150-153       1.9.45         Trigonometry       150-153       1.9.45         Trigonometrical ratios       156-161       1.10.47         Trigonometrical tables       162-172       1.10.48         Application in calculating height and distance (Simple applications)       173-177       1.10.49	Mensuration  Area and perimeter of square, rectangle and parallelogram  121-124  1.8.39  Retained  Area and perimeter of Triangles  125-129  1.8.40  Retained  Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse  Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder  Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels  Levers and Simple machines  Simple-machines—Effort and load, mechanical advantage, velocity ratio and mechanical advantage  Lever & Simple machines - Lever and its types  Trigonometry  Measurement of angles  Trigonometrical ratios  Trigonometrical ratios  Trigonometrical tables  Application in calculating height and distance (Simple applications)  121-124  1.8.40  Retained  148-147  1.8.41  1.8.42  Retained  145-147  1.8.43  Deleted  145-147  1.9.44  Deleted  150-153  1.9.45  Retained  150-153  1.9.45  Retained	Mensuration       6         Area and perimeter of square, rectangle and parallelogram       121-124       1.8.39       Retained         Area and perimeter of Triangles       125-129       1.8.40       Retained         Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse       130-137       1.8.41       Retained         Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder       138-144       1.8.42       Retained         Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels       145-147       1.8.43       Deleted         Levers and Simple machines       2         Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage       148-149       1.9.44       Deleted         Lever & Simple machines - Lever and its types       150-153       1.9.45       Retained         Trigonometry       0         Measurement of angles       154-155       1.10.46       Deleted         Trigonometrical ratios       156-161       1.10.47       Deleted         Trigonometrical tables       162-172       1.10.48       Deleted         Application in calculating height and distance (Simple applications)       173-177

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : ELECTRICIAN (2nd Year)

Sr. No.	Title of the Exercise	Page No.	Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	Friction				2	
1	Friction - Advantages and disadvantages, Laws of friction, coefficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Deleted		
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Deleted		
II	Centre of Gravity				6	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Deleted		
III	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		
IV	Algebra				10	

1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
V	Elasticity				2	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
VI	Heat Treatment				0	
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
2	Heat treatment - Different heat treatment process - Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Deleted		
VII	Profit and Loss				4	
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Retained		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Retained		
VIII	Estimation and Costing				8	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		32	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MACHINIST GRINDER (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				4	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Deleted		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Partially retained		

5	Properties and uses of <del>rubber, timber and</del> insulating materials	50-52	1.3.19	Partially retained		
IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity <b>Numerical related to L,C, O sections</b>	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
V	Speed and Velocity, Work, Power and Energy				2	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained	-	
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Partially retained		
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		

3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				8	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				2	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49			
			TOTAL REVISED HOURS		36	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MACHINIST GRINDER (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
ı	Friction				6	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Retained		
II	Centre of Gravity				4	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
III	Area of cut out regular surfaces and area of irregular surfaces				8	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Retained		
IV	Algebra				0	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Deleted		Repeated
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Deleted		Repeated
٧	Elasticity				8	

			TOTAL R	EVISED HOURS	38	
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
VIII	Estimation and Costing				10	
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		Not relevant
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		Not relevant
VII	Profit and Loss				0	
_	tempering, annealing, normalising and case hardening	3000	2.0.13	Deleted		
2	Heat treatment - Different heat treatment process – Hardening,	5866	2.6.13	Deleted		
1	Heat treatment and advantages	56-57	2.6.12	Retained		Only Introduction
VI	Heat Treatment				2	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MACHINIST (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				4	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Deleted		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Partially retained		

5	Properties and uses of <del>rubber, timber and</del> insulating materials	50-52	1.3.19	Partially retained		
IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity <b>Numerical related to L,C, O sections</b>	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
٧	Speed and Velocity, Work, Power and Energy				2	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained	-	
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Partially retained		
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
	L			1		

3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				8	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				2	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
Х	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49			
			TOTAL R	EVISED HOURS	36	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MACHINIST (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
ı	Friction				6	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Retained		
II	Centre of Gravity				4	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
Ш	Area of cut out regular surfaces and area of irregular surfaces				8	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Retained		
IV	Algebra				0	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Deleted		Repeated
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Deleted		Repeated
٧	Elasticity				8	

			TOTAL R	EVISED HOURS	38	
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
VIII	Estimation and Costing				10	
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		Not relevant
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		Not relevant
VII	Profit and Loss				0	
۷	tempering, annealing, normalising and case hardening	3000	2.0.13	Deleted		
2	Heat treatment - Different heat treatment process – Hardening,	5866	2.6.13	Deleted		
1	Heat treatment and advantages	56-57	2.6.12	Retained		Only Introduction
VI	Heat Treatment				2	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MAINTENANCE MECHANIC (CHEMICAL PLANT) (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		

Mass, Weight, Volume and Density				4	
Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
Speed and Velocity, Work, Power and Energy				0	
Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
Heat & Temperature and Pressure				6	
Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
Thermal conductivity and insulators	86-87	1.6.31	Deleted		
Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
Basic Electricity				4	
Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		Only basics to be taught
Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		Only basics to be taught
	100	4 7 25	Datainad		Out the sies to be to unlet
Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		Only basics to be taught
	Mass, volume, density, weight and specific gravity Related problems for mass, volume, density, weight and specific gravity Speed and Velocity, Work, Power and Energy Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation Speed and velocity - Related problems on speed & velocity Work, power, energy, HP, IHP, BHP and efficiency Potential energy, kinetic energy and related problems with assignment Heat & Temperature and Pressure Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and nonmetals Scales of temperature. Celsius, Fahrenheit, kelvin and conversion between scales of temperature Heat & Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation  Co-efficient of linear expansion and related problems with assignments Problem of heat loss and heat gain with assignments Thermal conductivity and insulators Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  Basic Electricity Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units Conductor, insulator, types of connections - series and parallel	Mass, volume, density, weight and specific gravity  Related problems for mass, volume, density, weight and specific gravity  Speed and Velocity, Work, Power and Energy  Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation  Speed and velocity - Related problems on speed & velocity  65-68  Work, power, energy, HP, IHP, BHP and efficiency  Potential energy, kinetic energy and related problems with assignment  Tental energy, kinetic energy and related problems with assignment  Tental and temperature and Pressure  Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and nonmetals  Scales of temperature. Celsius, Fahrenheit, kelvin and conversion between scales of temperature  Heat & Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation  Co-efficient of linear expansion and related problems with assignments  Problem of heat loss and heat gain with assignments  Thermal conductivity and insulators  Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  Basic Electricity  Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  Conductor, insulator, types of connections - series and parallel  102-107	Mass, volume, density, weight and specific gravity Related problems for mass, volume, density, weight and specific gravity  Speed and Velocity, Work, Power and Energy Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation Speed and velocity - Related problems on speed & velocity  Work, power, energy, HP, HHP, BHP and efficiency Potential energy, kinetic energy and related problems with assignment  Heat & Temperature and Pressure Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and nonmetals  Scales of temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation  Co-efficient of linear expansion and related problems with assignments  Re-87  Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  Basic Electricity Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  Conductor, insulator, types of connections - series and parallel  102-107  1.4.20  1.4.21  1.5.25  1.5.26  1.5.27  1.6.27  1.6.26  1.6.27  1.6.27  1.6.28	Mass, volume, density, weight and specific gravity  Related problems for mass, volume, density, weight and specific gravity  Speed and Velocity, Work, Power and Energy  Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity - Related problems on speed & velocity  Speed and velocity - Related problems on speed & velocity  Work, power, energy, HP, IHP, BHP and efficiency  Potential energy, kinetic energy and related problems with assignment  Potential energy, kinetic energy and related problems with assignment  Heat & Temperature and Pressure  Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and nonmetals  Scales of temperature - Celsius, Fahrenheit, kelvin and conversion between scales of temperature  Heat & Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation  Coefficient of linear expansion and related problems with assignments  Retained  Thermal conductivity and insulators  Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  Basic Electricity  Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  Conductor, insulator, types of connections - series and parallel  102-107 1.7.34 Retained	Mass, volume, density, weight and specific gravity  Related problems for mass, volume, density, weight and specific gravity  Speed and Velocity, Work, Power and Energy  Speed and Velocity, Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation  Speed-and-velocity Related problems on speed & velocity  Work, power, energy, HP, IHP, BHP and efficiency  Petential energy, kinetic energy and related problems with assignment  Heat & Temperature and Pressure  Concept of heat and temperature, effects of heat, difference between heat and temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature  Heat & Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation  Co-efficient of linear expansion and related problems with assignments  Problem of heat loss and heat gain with assignments  Retained  1.6.29  Deleted  Problem of heat loss and heat gain with assignments  Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  Basic Electricity  Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  Conductor, insulator, types of connections - series and parallel  102-107  1.7.34  Retained  1.6.20  Retained  1.6.21  Retained  1.6.22  Retained  1.6.23  Retained

5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		Only basics to be taught
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		Only basics to be taught
VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
Х	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Deleted		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL RE	VISED HOURS	30	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : INSTRUMENT MECHANIC (CHEMICAL PLANT) (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
ı	Friction				2	
1	Friction - Advantages and disadvantages, Laws of friction, coefficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Retained		
II	Centre of Gravity				0	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Deleted		
Ш	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		
IV	Algebra				0	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
V	Elasticity				0	

1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Deleted		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
VI	Heat Treatment				0	
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
2	Heat treatment - Different heat treatment process — Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Deleted		
VII	Profit and Loss				0	
1	Profit and loss Simple problems on profit & loss	6772	2.7.14	Deleted		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
VIII	Estimation and Costing				10	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16			
2	Estimation and costing - Problems on estimation and costing	92	2.8.17			
			TOTAL RI	EVISED HOURS	12	

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: MANUFACTURING PROCESS CONTROL AND AUTOMATION

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise	To be Retained / Deleted	Revised Hours	Remarks/ Justification
			No.			
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		Number systems
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		

IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Partially		
				deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
V	Speed and Velocity, Work, Power and Energy				6	
1	Speed and velocity - Rest, motion, speed, velocity, difference between	61-64	1.5.22	Retained		
	speed and velocity, acceleration and retardation					
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Retained		
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat	74-75	1.6.26	Retained		
	and temperature, boiling point & melting point of different metals and					
	non-metals					
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between	76-77	1.6.27	Retained		
	scales of temperature					
3	Heat &Temperature - Temperature measuring instruments, types of	78-79		Deleted		
	thermometer, pyrometer and transmission of heat - Conduction,		1.6.28			
	convection and radiation					
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute	88-97	1.6.32	Deleted		
	pressure, gauge pressure and gauges used for measuring pressure					
VII	Basic Electricity				8	
1	Introduction and uses of electricity, molecule, atom, how electricity is	98	1.7.33	Retained		
	produced, electric current AC,DC their comparison, voltage, resistance and					
	their units					
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		

4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL RI	EVISED HOURS	36	

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADES : MARINE ENGINE FITTER

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage					
1	Square and square root	27	1.2.08	Retained	6	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained Partially		

5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity, <b>numericals realted to sections L,C O.</b>	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
٧	Speed and Velocity, Work, Power and Energy			Deleted	0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				6	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained Partially		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Retained		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Partially retained		
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained Partially		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		

3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		30	

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MARINE FITTER (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		Only direct solving problems
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		

5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
٧	Speed and Velocity, Work, Power and Energy				2	
1	Speed and velocity Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				8	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Retained		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		

5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				2	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Retained		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
Х	Trigonometry				6	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MARINE FITTER (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
ı	Friction				6	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		Basics only
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Retained		
II	Centre of Gravity				4	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
III	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Retained		
IV	Algebra				0	
1	Algebra Addition, subtraction, multiplication & division	3235	2.4.08	Deleted		Already covered in 1 st year
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Deleted		
٧	Elasticity				2	

1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	Heat Treatment				2	
1	Heat treatment and advantages	56-57	2.6.12	Retained		
2	Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Retained		
VII	Profit and Loss				0	
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
VIII	Estimation and Costing				8	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL RI	EVISED HOURS	22	

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MASON (BUILDING CONSTRUCTOR)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
-	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				8	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		

Mass, volume, density, weight and specific gravity   Seed   1.4.20   Retained	IV	Mass, Weight, Volume and Density				4	
V     Speed and Velocity, Work, Power and Energy     61-64     1.5.22     Deleted       1     Speed and velocity, Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation     61-64     1.5.22     Deleted       2     Speed and velocity, Related problems on speed & velocity     65-68     1.5.23     Deleted       3     Work, power, energy, HP, JHP, BHP and efficiency     69-71     1.5.24     Deleted       4     Potential energy, kinetic energy and related problems with assignment     72-73     1.5.25     Deleted       6     Concept of heat and temperature, effects of heat, difference between heat and temperature, bolling point & melting point of different metals and non-metals     74-75     1.6.26     Retained       2     Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature and transmission of heat - Conduction, convection and radiation     78-79     1.6.27     Retained       4     Co-efficient of linear expansion and related problems with assignments     80-81     1.6.29     Retained       5     Problem of heat loss and heat again with assignments     82-85     1.6.30     Deleted       6     Thermal conductivity and insulators     86-87     1.6.31     Retained       7     Thermal conductivity and insulators     88-97     1.6.32     Deleted       8     Introduction and uses of el	1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
Speed-and-velocity-Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation   Speed-and-velocity, acceleration and retardation   Speed-and-velocity acceleration and represent   Speed-and-velocity acceleration and represent   Speed-and-velocity acceleration and represent   Speed-and-velocity acceleration and represent   Speed-and-velocity acceleration   Speed-and-velocity   Speed-and-ve	2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
speed and velocity, acceleration and retardation       Speed and velocity, acceleration and retardation       Speed and velocity Related problems on speed & velocity       65-68       1.5.23       Deleted       Speed and velocity Related problems on speed & velocity         3       Work, power, energy, HP, IHP, BHP and efficiency       69-71       1.5.24       Deleted       Speed and velocity. In the problems with assignment         4       Potential energy, kinetic energy and related problems with assignment       72-73       1.5.25       Deleted       Speed and velocity. Acceleration and related problems with assignment and temperature, gelsius, Fahrenheid, kelvin and conversion between heat and temperature, boiling point & melting point of different metals and non-metals       16.26       Retained       16.27       Retained       16.27       Retained       16.27       Retained       16.27       Retained       16.27       Retained       16.28       16.29       16.29       16.29       16.29       16.29       16.29       16.29       16.29       16.29       16.29       16.29       16.29	٧	Speed and Velocity, Work, Power and Energy				0	
2 Speed and velocity Related problems on speed & velocity 3 Work, power, energy, HP, IHP, BHP and efficiency 4 Potential energy, kinetic energy and related problems with assignment 72-73 1.5.24 Deleted 72-73 1.5.25 Deleted 73-74 1.5.25 Deleted 74-75 1.5.26 Deleted 75-75 1.5.26 Deleted 76-76 Deleted 76-77 1.5.27 Deleted 76-78 1.5.26 Deleted 77-75 1.5.27 Deleted 78-79 1.5.28 Deleted 78-79 1.5.28 Deleted 78-79 1.5.29 Deleted 78-79 1.5.29 Deleted 78-79 1.5.29 Deleted 78-79 1.5.29 Deleted 78-79 1.5.20 Deleted 78-	1		61-64	1.5.22	Deleted		
Work, power, energy, HP, IHP, BHP and efficiency   69-71   1.5.24   Deleted		speed and velocity, acceleration and retardation					
4     Potential energy, kinetic energy and related problems with assignment     72-73     1.5.25     Deleted       VI     Heat & Temperature and Pressure     6       1     Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals     74-75     1.6.26     Retained       2     Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature.     76-77     1.6.27     Retained       3     Heat & Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation     78-79     Deleted     1.6.28       4     Co-efficient of linear expansion and related problems with assignments     80-81     1.6.29     Retained       5     Problem of heat loss and heat gain with assignments     82-85     1.6.31     Retained       6     Thermal conductivity and insulators     86-87     1.6.31     Retained       7     Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure     88-97     1.6.32     Deleted       VII     Basic Electricity     0     1.7.33     Deleted       1     Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units     102-107     1.7.34	2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
VI       Heat & Temperature and Pressure       6         1       Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals       74-75       1.6.26       Retained       \$\$\text{scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature       76-77       1.6.27       Retained       \$\$\text{scales of temperature measuring instruments, types of thermometer, pyrometer and transmission of heat—Conduction, convection and radiation       78-79       \$\$\text{Deleted}\$       \$\$\	3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals  Coales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature permerature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature.  Heat & Temperature — Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat — Conduction, convection and radiation  Co-efficient of linear expansion and related problems with assignments  Problem of heat loss and heat gain with assignments  Problem of heat loss and heat gain with assignments  Thermal conductivity and insulators  Concept of pressure — Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  Conductor, insulator, types of connections—series and parallel  Ohm's law, relation between V.I.R & related problems  108 1.7.35 Deleted	4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
and temperature, boiling point & melting point of different metals and non-metals  Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature  Heat & Temperature — Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat — Conduction, convection and radiation  Co-efficient of linear expansion and related problems with assignments  Problem of heat loss and heat gain with assignments  Problem of heat loss and heat gain with assignments  Refailed  Thermal conductivity and insulators  Concept of pressure — Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  Conductor, insulator, types of connections — series and parallel  Ohm's law, relation between V.I.R & related problems  Retained  Lo.29 Retained  Reta	VI	•				6	
Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	1		74-75	1.6.26	Retained		
Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature — Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat—Conduction, convection and radiation  4 Co-efficient of linear expansion and related problems with assignments  5 Problem of heat-loss and heat gain with assignments  6 Thermal conductivity and insulators  7 Concept of pressure — Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  VII Basic Electricity  Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  2 Conductor, insulator, types of connections—series and parallel  3 Ohm's law, relation between V.I.R & related problems  108 1.7.35 Deleted  1.6.27 Retained  1.6.28 Petained  1.6.28 Deleted  1.6.29 Retained  1.6.29 Deleted  1.6.20 Deleted  1.6.20 Deleted  1.6.20 Deleted  1.6.21 Retained  1.6.22 Deleted  1.6.22 Deleted  1.6.28 Deleted  1.6.29 Retained  1.6.29 Retained  1.6.29 Retained  1.6.29 Retained  1.6.29 Retained  1.6.29 Deleted  1.6.20 Deleted  1.6.20 Deleted  1.6.20 Deleted  1.6.20 Deleted  1.6.21 Deleted  1.6.22 Deleted  1.6.22 Deleted  1.6.22 Deleted  1.6.22 Deleted  1.6.22 Deleted  1.6.23 Deleted  1.6.24 Deleted  1.6.25 Deleted  1.6.26 Deleted  1.6.28 Deleted  1.6.28 Deleted  1.6.29 Retained  1.6.29 Retained  1.6.29 Retained  1.6.29 Retained  1.6.20 Deleted  1.6.20 Deleted  1.6.21 Deleted  1.6.22 Deleted  1.6.22 Deleted  1.6.23 Deleted  1.6.25 Deleted  1.6.25 Deleted  1.6.26 Deleted  1.6.27 Deleted  1.6.28 Deleted  1.6.29 Deleted  1.6.29 Deleted  1.6.20 Deleted  1.6.20 Deleted  1.6.21 Deleted  1.6.22 Deleted  1.6.22 Deleted  1.6.22 Deleted  1.6.22 Deleted  1.6.23 Deleted  1.6.25 Deleted  1.6.26 Deleted  1.6.26 Deleted  1.6.27 Deleted  1.6.28 Dele		, , , , , , , , , , , , , , , , , , , ,					
scales of temperature    Second   Secon							
Heat & Temperature — Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat — Conduction, convection and radiation  4 Co-efficient of linear expansion and related problems with assignments 80-81 1.6.29 Retained  5 Problem of heat loss and heat gain with assignments 82-85 1.6.30 Deleted  6 Thermal conductivity and insulators 86-87 1.6.31 Retained  7 Concept of pressure — Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  VII Basic Electricity 98 98 1.7.33 Deleted  1 Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  2 Conductor, insulator, types of connections—series and parallel 102-107 1.7.34 Deleted 1.7.35 Dele	2	· · · · · · · · · · · · · · · · · · ·	76-77	1.6.27	Retained		
thermometer, pyrometer and transmission of heat—Conduction, convection and radiation  4		·	70.70		Dalatad		
convection and radiation  4 Co-efficient of linear expansion and related problems with assignments  5 Problem of heat loss and heat gain with assignments  6 Thermal conductivity and insulators  7 Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  VII Basic Electricity  1 Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  2 Conductor, insulator, types of connections - series and parallel  3 Ohm's law, relation between V.I.R & related problems  80-81 1.6.29 Retained  80-81 1.6.30 Deleted  98-89 1.6.31 Retained  98-97 1.6.32 Deleted  98 1.7.33 Deleted  102-107 1.7.34 Deleted	3	, , , , , , , , , , , , , , , , , , , ,	78-79	1.6.20	Deleted		
5       Problem of heat loss and heat gain with assignments       82-85       1.6.30       Deleted         6       Thermal conductivity and insulators       86-87       1.6.31       Retained         7       Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure       88-97       1.6.32       Deleted         VII       Basic Electricity       0         1       Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units       98       1.7.33       Deleted         2       Conductor, insulator, types of connections - series and parallel       102-107       1.7.34       Deleted         3       Ohm's law, relation between V.I.R & related problems       108       1.7.35       Deleted				1.6.28			
Thermal conductivity and insulators  Thermal conductivity and insulators  Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  VII Basic Electricity  Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  Conductor, insulator, types of connections - series and parallel  Ohm's law, relation between V.I.R & related problems  86-87  1.6.31  Retained  0  1.7.33  Deleted  1.7.33  Deleted  1.7.33  Deleted  1.7.34  Deleted	4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
7 Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  VII Basic Electricity  Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  2 Conductor, insulator, types of connections - series and parallel  3 Ohm's law, relation between V.I.R & related problems  88-97  1.6.32  Deleted  0  1.7.33  Deleted  1.7.33  Deleted  1.7.34  Deleted	5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
VII       Basic Electricity       O         1       Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units       98       1.7.33       Deleted         2       Conductor, insulator, types of connections – series and parallel       102-107       1.7.34       Deleted         3       Ohm's law, relation between V.I.R & related problems       108       1.7.35       Deleted	6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
VII       Basic Electricity       0         1       Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units       98       1.7.33       Deleted         2       Conductor, insulator, types of connections – series and parallel       102-107       1.7.34       Deleted         3       Ohm's law, relation between V.I.R & related problems       108       1.7.35       Deleted	7	Concept of pressure - Units of pressure, atmospheric pressure, absolute	88-97	1.6.32	Deleted		
1 Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  2 Conductor, insulator, types of connections – series and parallel  3 Ohm's law, relation between V.I.R & related problems  98 1.7.33 Deleted  102-107 1.7.34 Deleted  108 1.7.35 Deleted		pressure, gauge pressure and gauges used for measuring pressure					
produced, electric current AC,DC their comparison, voltage, resistance and their units  2 Conductor, insulator, types of connections - series and parallel  3 Ohm's law, relation between V.I.R & related problems  102-107 1.7.34 Deleted  108 1.7.35 Deleted	VII	Basic Electricity				0	
their units  2 Conductor, insulator, types of connections – series and parallel 3 Ohm's law, relation between V.I.R & related problems  102-107 1.7.34 Deleted  108 1.7.35 Deleted	1	· · · · · · · · · · · · · · · · · · ·	98	1.7.33	Deleted		
2 Conductor, insulator, types of connections – series and parallel 102-107 1.7.34 Deleted 108 1.7.35 Deleted 108 1.7.35 Deleted		, , , , , , , , , , , , , , , , , , , ,					
3 Ohm's law, relation between V.I.R & related problems 108 1.7.35 Deleted		their units					
	2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
4 Electrical power, energy and their units, calculation with assignments 112-114 1.7.36 Deleted	3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
	4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		

5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				6	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44			
2	Lever & Simple machines - Lever and its types	150-153	1.9.45			
Х	Trigonometry				6	
1	Measurement of angles	154-155	1.10.46			
2	Trigonometrical ratios	156-161	1.10.47			
3	Trigonometrical tables	162-172	1.10.48			
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49			
			TOTAL REVISED HOURS		40	

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: MECHANIC AUTO BODY PAINT REPAIR

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage					
1	Square and square root	27	1.2.08	Retained	6	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				8	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		

IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity.	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
٧	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed	61-64	1.5.22	Deleted		
	and velocity, acceleration and retardation					
2	Speed and velocity Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				10	
1	Concept of heat and temperature, effects of heat, difference between heat	74-75	1.6.26	Retained		
	and temperature, boiling point & melting point of different metals and non- metals					
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between	76-77	1.6.27	Retained		
	scales of temperature					
3	Heat &Temperature - Temperature measuring instruments, types of	78-79		Retained		
	thermometer, pyrometer and transmission of heat - Conduction, convection and radiation		1.6.28	Partially		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute	88-97	1.6.32	Partially		
	<del>pressure,</del> gauge pressure and gauges used for measuring pressure			retained		
VII	Basic Electricity				6	
1	Introduction and uses of electricity, molecule, atom, how electricity is	98	1.7.33	Retained		Some topics also covered
	<del>produced,</del> electric current AC,DC their comparison, voltage, resistance and their units			Partially		in theory syllabus.
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		

5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				2	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL RE	VISED HOURS	40	

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MECHANIC AUTO BODY PAINT REPAIR

Sr.	Title of the Exercise	NIMI	NIMI	To be	Revised	Remarks/ Justification
No.		Books'	Books'	Retained /	Hours	
		Page No.	Exercise	Deleted		
			No.			
1	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage					
1	Square and square root	27	1.2.08	Retained	6	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	Material Science				8	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		

IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity.	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
٧	Speed and Velocity, Work, Power and Energy				4	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Partially retained		
VI	Heat & Temperature and Pressure				6	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Partially retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Partially retained		
VII	Basic Electricity				6	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained Partially		Some topics also covered in theory syllabus.
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		

4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
6	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				2	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
Х	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL RE	TOTAL REVISED HOURS		

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MECHANIC AGRICULTURAL MACHINERY (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		Simple calculations only
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		

IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity, numerical related to L,C,O section only	53-54	1.4.20	Retained		
			1			
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	Speed and Velocity, Work, Power and Energy				4	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		Only basics
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat—Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		Basics only
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		

5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				4	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				2	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Retained		Only Basics
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
Х	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL RE	VISED HOURS	36	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MECHANIC AGRICULTURAL MACHINERY (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books ' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
1	Friction				4	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		Only theory
2	Friction - Lubrication	811	2.1.02	Retained		Only theory
3	Friction Co-efficient of friction, application and effects of friction in workshop practice	1213	2.1.03			
II	Centre of Gravity				0	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
Ш	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		
IV	Algebra				0	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Deleted		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Deleted		
V	Elasticity				0	

			TOTAL REVISED HOURS		16	
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
VIII	Estimation and Costing				12	
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
VII	Profit and Loss				0	
_	tempering, annealing, normalising and case hardening					
2	Heat treatment - Different heat treatment process – Hardening,	5866	2.6.13	Deleted		
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
VI	Heat Treatment				0	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: MECHANIC AUTO ELECTRICAL & ELECTRONICS

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage					
1	Square and square root	27	1.2.08	Retained	6	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		

5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Partially deleted		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity.	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	Speed and Velocity, Work, Power and Energy				4	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		Simple problems
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				0	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Deleted		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				10	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
		1				

3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	Mensuration				4	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				2	
1	Simple machines – Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		40	

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MECHANIC CONSUMER ELECTRONIC APPLIANCES (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
-	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		

Mass, Weight, Volume and Density				2	
Mass, volume, density, weight and specific gravity	53-54	1.4.20	Partially deleted		
Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
Speed and Velocity, Work, Power and Energy				0	
Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
Speed and velocity Related problems on speed & velocity	65-68	1.5.23	Deleted		
Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
Heat & Temperature and Pressure				4	
Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
Thermal conductivity and insulators	86-87	1.6.31	Deleted		
Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
Basic Electricity				12	
Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
	Related problems for mass, volume, density, weight and specific gravity  Speed and Velocity, Work, Power and Energy  Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation  Speed and velocity - Related problems on speed & velocity  Work, power, energy, HP, IHP, BHP and efficiency  Potential energy, kinetic energy and related problems with assignment  Heat & Temperature and Pressure  Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and nonmetals  Scales of temperature - Celsius, Fahrenheit, kelvin and conversion between scales of temperature  Heat & Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation  Co efficient of linear expansion and related problems with assignments  Problem of heat loss and heat gain with assignments  Thermal conductivity and insulators  Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  Basic Electricity  Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  Conductor, insulator, types of connections - series and parallel	Related problems for mass, volume, density, weight and specific gravity  Speed and Velocity, Work, Power and Energy  Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation  Speed and velocity - Related problems on speed & velocity  Speed and velocity - Related problems on speed & velocity  Forestial energy, kinetic energy and related problems with assignment  To-73  Heat & Temperature and Pressure  Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and nonmetals  Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature  Heat & Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation  Co-efficient of linear expansion and related problems with assignments  Problem of heat loss and heat gain with assignments  Thermal conductivity and insulators  Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  Basic Electricity  Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  Conductor, insulator, types of connections - series and parallel  102-107	Related problems for mass, volume, density, weight and specific gravity  Speed and Velocity, Work, Power and Energy  Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation  Speed and velocity - Related problems on speed & velocity  Work, power, energy, HP, IHP, BHP and efficiency  Potential energy, kinetic energy and related problems with assignment  To-73  Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and nonmetals  Scales of temperature. Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation  Ce-efficient of linear expansion and related problems with assignments  Ro-81  Thermal conductivity and insulators  Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  Basic Electricity  Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC, DC their comparison, voltage, resistance and their units  Conductor, insulator, types of connections - series and parallel  1.6.20  1.4.20  1.5.22  1.5.23  1.5.25  1.6.26  1.6.26  1.6.27  1.6.27  1.6.27  1.6.27  1.6.28	Mass, volume, density, weight and specific gravity  Related problems for mass, volume, density, weight and specific gravity  Speed and Velocity, Work, Power and Energy  Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation  Speed and velocity - Related problems on speed & velocity  Work, power, energy, HP, IHP, BHP and efficiency  Potential energy, kinetic energy and related problems with assignment  Heat & Temperature and Pressure  Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and nonmetals  Scales of temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation  Co-efficient of linear expansion and related problems with assignments  Results of the problems of the problems with assignments  Retained  1.6.28  Deleted  Thermal conductivity and insulators  Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure - Units of pressure, atmospheric pressure and their units  Conductor, insulator, types of connections - series and parallel  Conductor, insulator, types of connections - series and parallel  1.7.33  Retained	Related problems for mass, volume, density, weight and specific gravity  Speed and Velocity, Work, Power and Energy  Speed and Velocity, Work, Power and Energy  Speed and velocity, Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation  Speed and velocity, Related problems on speed & velocity  Work, power, energy, HP, HPP, BHP and efficiency  Potential energy, kinetic energy and related problems with assignment  Potential energy, kinetic energy and related problems with assignment  Heat & Temperature and Pressure  Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals  Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature  Heat & Temperature — Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat — Conduction, convection and radiation  Co-efficient of linear expansion and related problems with assignments  Robert of linear expansion and related problems with assignments  Robert of linear expansion and related problems with assignments  Robert of linear expansion and related problems with assignments  Robert of linear expansion and related problems with assignments  Robert of linear expansion and related problems with assignments  Robert of linear expansion and related problems with assignments  Robert of linear expansion and related problems with assignments  Robert of linear expansion and related problems with assignments  Robert of linear expansion and related problems with assignments  Robert of linear expansion and related problems with assignments  Robert of linear expansion and related problems with assignments  Robert of linear expansion and related problems with assignments  Robert of linear expansion and related problems with assignments  Robert of linear expansion and related problems with assignments  Robert of linear expansion and related problems with assignments  Robert of lin

			TOTAL REVISED HOURS		35	
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
3	Trigonometrical tables	162-172	1.10.48	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
1	Measurement of angles	154-155	1.10.46	Retained		
Х	Trigonometry				3	
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
IX	Levers and Simple machines				0	
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
VIII	Mensuration				0	
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MECHANIC CONSUMER ELECTRONIC APPLIANCES (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	Friction				0	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Deleted		
2	Friction - Lubrication	811	2.1.02	Deleted		
3	Friction Co efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Deleted		
II	Centre of Gravity				0	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Deleted		
III	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		
IV	Algebra				8	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
٧	Elasticity				0	

1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
VI	Heat Treatment				0	
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
2	Heat treatment - Different heat treatment process — Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Deleted		
VII	Profit and Loss				0	
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
VIII	Estimation and Costing				8	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		16	

### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MECHANIC DIESEL

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise	To be Retained / Deleted	Revised Hours	Remarks/ Justification
			No.			
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		Simple calculations only
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		

IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity, numerical related to L,C,O section only	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
٧	Speed and Velocity, Work, Power and Energy				4	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		Only basics
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat—Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		Basics only
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		

5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				6	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				2	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Retained		Only Basics
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
Х	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL RI	VISED HOURS	40	

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MECHANIC ELECTRIC VEHICLE (1st Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
1	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				2	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		

IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Partially deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
٧	Speed and Velocity, Work, Power and Energy				2	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Retained		
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute	88-97	1.6.32	Deleted		
	pressure, gauge pressure and gauges used for measuring pressure					
VII	Basic Electricity				12	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially deleted		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		

			TOTAL REVISED HOURS		40	
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
3	Trigonometrical tables	162-172	1.10.48	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
1	Measurement of angles	154-155	1.10.46	Retained		
Х	Trigonometry				2	
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
	mechanical advantage					
	efficiency of machine, relationship between efficiency, velocity ratio and					
1	Simple machines - Effort and load, mechanical advantage, velocity ratio,	148-149	1.9.44	Deleted		
IX	Levers and Simple machines				0	
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
VIII	Mensuration				6	
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MECHANIC ELECTRIC VEHICLE (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
1	Friction				4	
1	Friction - Advantages and disadvantages, Laws of friction, coefficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Deleted		
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Deleted		
II	Centre of Gravity				4	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Deleted		
III	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		
IV	Algebra				6	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
٧	Elasticity				2	

1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
VI	Heat Treatment				0	
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
2	Heat treatment - Different heat treatment process — Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Deleted		
VII	Profit and Loss				0	
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Retained		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Retained		
VIII	Estimation and Costing				10	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		26	

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: MECHANIC LENS/ PRISM GRINDING

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		Simple calculations only
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		About Glass and Plastic materials
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		

5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		Properties of Glass and Plastic materials
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
٧	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between	61-64	1.5.22	Deleted		
	speed and velocity, acceleration and retardation					
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute	88-97	1.6.32	Retained		Basics only
	pressure, gauge pressure and gauges used for measuring pressure					
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		

4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				6	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Retained		Only Basics
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
Х	Trigonometry				0	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL RI	VISED HOURS	32	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: MECHANIC MACHINE TOOL MAINTENANCE (1st Year) TOOL

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				4	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Deleted		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		

4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Partially retained		
5	Properties and uses of <del>rubber, timber and</del> insulating materials	50-52	1.3.19	Partially retained		
IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity <b>Numerical related to L,C, O</b> sections	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
٧	Speed and Velocity, Work, Power and Energy				2	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained	-	
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat—Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Partially retained		
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		

2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	Mensuration				8	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				2	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
Х	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49			
			TOTAL REV	ISED HOURS	36	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MECHANIC MACHINE TOOL MAINTENANCE TOOL (2nd Year)

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	Friction				4	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Retained		
II	Centre of Gravity				4	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
Ш	Area of cut out regular surfaces and area of irregular surfaces				4	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Retained		
IV	Algebra				0	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Deleted		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Deleted		
٧	Elasticity				8	

			TOTAL R	EVISED HOURS	36	
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
VIII	Estimation and Costing				8	
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		Not relevant
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		Not relevant
VII	Profit and Loss				0	
2	Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Deleted		
1	Heat treatment and advantages	56-57	2.6.12	Retained		Only Introduction
VI	Heat Treatment				8	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MECHANIC MINING MACHINERY (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		

IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		Only basic problems
٧	Speed and Velocity, Work, Power and Energy				2	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		Only basic
VI	Heat & Temperature and Pressure				6	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	Basic Electricity				6	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		

4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
6	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				2	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				2	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		Only Basics
Х	Trigonometry				0	
1	Measurement of angles	154-155	1.10.46	Deleted		
2	Trigonometrical ratios	156-161	1.10.47	Deleted		
3	Trigonometrical tables	162-172	1.10.48	Deleted		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL RE	VISED HOURS	34	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MECHANIC MINING MACHINERY (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
ı	Friction				6	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		Only theory
2	Friction - Lubrication	811	2.1.02	Retained		Only theory
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03			Only theory
II	Centre of Gravity				2	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		Only theory
III	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		
IV	Algebra				0	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Deleted		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Deleted		
٧	Elasticity				8	

			TOTAL REVISED HOURS		30	
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
VIII	Estimation and Costing				12	
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
VII	Profit and Loss				0	
_	tempering, annealing, normalising and case hardening		2.0.13	20.000		
2	Heat treatment - Different heat treatment process – Hardening,	5866	2.6.13	Deleted		
1	Heat treatment and advantages	56-57	2.6.12	Retained		
VI	Heat Treatment				2	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MECHANIC MOTOR VEHICLE (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		

IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		Only basic problems
٧	Speed and Velocity, Work, Power and Energy				8	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed	61-64	1.5.22	Retained		
	and velocity, acceleration and retardation					
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Retained		Only basic
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Heat &Temperature - Temperature measuring instruments, types of	78-79		Deleted		
	thermometer, pyrometer and transmission of heat—Conduction, convection and radiation		1.6.28			
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	Basic Electricity				6	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		

5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
6	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				2	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				2	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		Only Basics
X	Trigonometry				0	
1	Measurement of angles	154-155	1.10.46	Deleted		
2	Trigonometrical ratios	156-161	1.10.47	Deleted		
3	Trigonometrical tables	162-172	1.10.48	Deleted		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL RE	VISED HOURS	40	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MECHANIC MOTOR VEHICLE (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	Friction				6	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		Only theory
2	Friction - Lubrication	811	2.1.02	Retained		Only theory
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03			Only theory
II	Centre of Gravity				2	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		Only theory
Ш	Area of cut out regular surfaces and area of irregular surfaces				6	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		
IV	Algebra				0	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Deleted		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Deleted		
٧	Elasticity				8	

1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	Heat Treatment				2	
1	Heat treatment and advantages	56-57	2.6.12	Retained		
2	Heat treatment - Different heat treatment process — Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Deleted		
VII	Profit and Loss				0	
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
VIII	Estimation and Costing				10	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL RE	VISED HOURS	34	

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MECHANIC TRACTOR

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		Simple calculations only
Ш	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		

5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity, numerical related to L,C,O section only	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
٧	Speed and Velocity, Work, Power and Energy				4	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		Only basics
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		Basics only
VII	Basic Electricity				2	

1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				6	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				2	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Retained		Only Basics
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		

			TOTAL RE	VISED HOURS	40	
	<del>applications)</del>					
4	Application in calculating height and distance (Simple	173-177	1.10.49	Deleted		
3	Trigonometrical tables	162-172	1.10.48	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : OPERATOR ADVANCED MACHINE TOOL (1st Year)

Sr.	Title of the Exercise	NIMI	NIMI	To be	Revised	Remarks/
No.		Books'	Books'	Retained /	Hours	Justification
		Page	Exercise	Deleted		
		No.	No.			
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
Ш	Square root, Ratio and Proportions, Percentage				4	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Deleted		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Partially		
				retained		

5	Properties and uses of <del>rubber, timber and</del> insulating materials	50-52	1.3.19	Partially retained		
IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity <b>Numerical related to L,C, O sections</b>	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
٧	Speed and Velocity, Work, Power and Energy				2	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained	-	
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Partially retained		
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		

		TOTAL RE	VISED HOU	RS	36	
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49			
3	Trigonometrical tables	162-172	1.10.48	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
1	Measurement of angles	154-155	1.10.46	Retained		
X	Trigonometry				2	
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
IX	Levers and Simple machines	140 140	104	Dalated	2	
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
VIII	Mensuration				8	
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: OPERATOR ADVANCED MACHINE TOOL (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
ı	Friction				6	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Retained		
II	Centre of Gravity				4	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
Ш	Area of cut out regular surfaces and area of irregular surfaces				8	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Retained		
IV	Algebra				0	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Deleted		Repeated
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Deleted		Repeated
V	Elasticity				8	

			TOTAL R	EVISED HOURS	36	
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
VIII	Estimation and Costing				8	
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		Not relevant
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		Not relevant
VII	Profit and Loss				0	
_	tempering, annealing, normalising and case hardening	30 00	2.0.13	Deleted		
2	Heat treatment - Different heat treatment process – Hardening,	5866	2.6.13	Deleted		
1	Heat treatment and advantages	56-57	2.6.12	Retained		Only Introduction
VI	Heat Treatment				2	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : PAINTER (GENERAL) (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage					
1	Square and square root	27	1.2.08	Retained	6	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				0	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Deleted		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		

IV	Mass, Weight, Volume and Density				0	
1	Mass, volume, density, weight and specific gravity.	53-54	1.4.20	Deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
٧	Speed and Velocity, Work, Power and Energy			Deleted	0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				0	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Deleted		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				0	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Deleted		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
	l .					

4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				6	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
Х	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
		TOTAL REV	/ISED HOUR	<u> </u>	18	

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : PAINTER (GENERAL) (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	Friction				0	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Deleted		
2	Friction - Lubrication	811	2.1.02	Deleted		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Deleted		
II	Centre of Gravity				0	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
III	Area of cut out regular surfaces and area of irregular surfaces				10	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Retained		
IV	Algebra				6	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
٧	Elasticity				0	

			TOTAL REVISED HOURS		30	
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
VIII	Estimation and Costing				10	
2	Profit and loss - Simple and compound interest	7384	2.7.15	Retained		
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Retained		
VII	Profit and Loss				4	
_	annealing, normalising and case hardening	35 00	2.0.13	Beleted		
2	Heat treatment - Different heat treatment process – Hardening, tempering,	5866	2.6.13	Deleted		
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
VI	Heat Treatment				0	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Deleted		

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : PLUMBER

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage					
1	Square and square root	27	1.2.08	Retained	6	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Deleted		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		

5	Properties and uses of <del>rubber, timber and</del> insulating materials	50-52	1.3.19	Partially deleted		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity.	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
٧	Speed and Velocity, Work, Power and Energy			Deleted	0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
L	1			I	1	_1

2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				6	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
X	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
		TOTAL R	EVISED HO	URS	32	

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADES : PLASTIC PROCESSING OPERATOR

Sr. No.	Title of the Exercise	NIMI Books' Page No.	NIMI Books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				2	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		Properties and uses Polymer, thermoplastic and thermoset material
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		

4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained Partially		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity.	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
٧	Speed and Velocity, Work, Power and Energy			Deleted	0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				6	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Retained		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Partially retained		
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained Partially		

2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				4	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		

2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Deleted		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		30	

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: PLUMBER

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage					
1	Square and square root	27	1.2.08	Retained	6	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
III	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Deleted		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		

5	Properties and uses of <del>rubber, timber and</del> insulating materials	50-52	1.3.19	Partially deleted		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity.	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
٧	Speed and Velocity, Work, Power and Energy			Deleted	0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		

2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				6	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
X	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		32	

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: PUMP OPERATOR CUM MECHANIC

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		Simple calculations only
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		

5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity, numerical related to L,C,O section only	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	Speed and Velocity, Work, Power and Energy				4	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		Only basics
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		Basics only
VII	Basic Electricity				6	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		

3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	Mensuration				6	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Retained		Only Basics
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
Х	Trigonometry				0	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL RE	VISED HOURS	38	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : REFRACTORY TECHNICIAN (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		Only direct solving problems
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				8	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Deleted		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		

5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
٧	Speed and Velocity, Work, Power and Energy				2	
1	Speed and velocity—Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				12	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Retained		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		

5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
Х	Trigonometry				0	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		38	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: REFRACTORY TECHNICIAN (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	Friction				0	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction Co-efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Retained		
II	Centre of Gravity				4	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
Ш	Area of cut out regular surfaces and area of irregular surfaces				8	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Retained		
IV	Algebra				0	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Deleted		Already covered in 1 st year
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Deleted		
٧	Elasticity				2	

			TOTAL R	EVISED HOURS	28	
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
VIII	Estimation and Costing				6	
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
VII	Profit and Loss				0	
2	Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Retained		
1	Heat treatment and advantages	56-57	2.6.12	Retained		
VI	Heat Treatment				8	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : REFRIGERATION & AIR CONDITIONING (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		Only Direct problem solving
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		

5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Partially retained		Covered in theory
IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity, numerical related to L,C,O section only	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	Speed and Velocity, Work, Power and Energy				2	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				12	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Retained		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		

			TOTAL RI HOURS	ENIZED	38	
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted	20	
3	Trigonometrical tables	162-172	1.10.48	Deleted		
2	<del>Trigonometrical ratios</del>	156-161	1.10.47	Deleted		
1	Measurement of angles	154-155	1.10.46	Deleted		
Х	Trigonometry				0	
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
IX	Levers and Simple machines				0	
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
VIII	Mensuration				4	
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : REFRIGERATION & AIR CONDITIONING (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	Friction				6	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Retained		
II	Centre of Gravity				4	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
Ш	Area of cut out regular surfaces and area of irregular surfaces				8	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Retained		
IV	Algebra				0	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Deleted		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Deleted		
٧	Elasticity				8	

			TOTAL R	TOTAL REVISED HOURS		
2	Estimation and costing - Problems on estimation and costing	92-95	2.8.17	Retained		
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
VIII	Estimation and Costing				6	
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
VII	Profit and Loss				0	
2	Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Retained		
1	Heat treatment and advantages	56-57	2.6.12	Retained		
VI	Heat Treatment				8	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : MECHANIC DIESEL

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		Simple calculations only
Ш	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		More about Rubber materials
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		

5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity.	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity—Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		Only basics
VI	Heat & Temperature and Pressure				8	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Retained		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		Basics only
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		

5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				6	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				2	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Retained		Only Basics
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
Х	Trigonometry				0	
1	Measurement of angles	154-155	1.10.46	Deleted		
2	Trigonometrical ratios	156-161	1.10.47	Deleted		
3	Trigonometrical tables	162-172	1.10.48	Deleted		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		38	

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADES : SHEET METAL WORKER

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage					
1	Square and square root	27	1.2.08	Retained	6	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained Partially		

5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity, <b>numericals realted to sections L,C O.</b>	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	Speed and Velocity, Work, Power and Energy			Deleted	0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				6	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Heat &Temperature - <del>Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation</del>	78-79	1.6.28	Retained Partially		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Partially retained		
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained Partially		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
		1		1	1	

3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				8	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL RE	VISED HOURS	38	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : SOLAR TECHNICIAN (ELECTRICAL)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				2	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		

IV	Mass, Weight, Volume and Density				0	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
٧	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
	<i></i>					
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				6	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				8	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
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4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
6	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Partially deleted		
VIII	Mensuration				4	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
Х	Trigonometry				6	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		36	

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: SPINNING TECHNICIAN (1st Year)

Sr.	Title of the Exercise	Page No.	Exercise	To be	Revise	Remarks/ Justification
No.			No.	Retained /	d Hours	
				Deleted	Hours	
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		Properties of yarn

IV	Mass, Weight, Volume and Density				0	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
٧	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and	61-64	1.5.22	Deleted		
	velocity, acceleration and retardation					
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				2	
1	Concept of heat and temperature, effects of heat, difference between heat and	74-75	1.6.26	Retained		
	temperature, boiling point & melting point of different metals and non-metals					
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales	76-77	1.6.27	Deleted		
	of temperature					
3	Heat &Temperature - Temperature measuring instruments, types of thermometer,	78-79		Deleted		
	pyrometer and transmission of heat - Conduction, convection and radiation		1.6.28			
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure,	88-97	1.6.32	Deleted		
	gauge pressure and gauges used for measuring pressure					
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced,	98	1.7.33	Retained		
	electric current AC,DC their comparison, voltage, resistance and their units					
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		

4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
Х	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		20	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : SPINNING TECHNICIAN (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	Friction				6	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Retained		
II	Centre of Gravity				2	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
Ш	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		
IV	Algebra				4	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
٧	Elasticity				6	

1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
VI	Heat Treatment				0	
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
2	Heat treatment - Different heat treatment process — Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Deleted		
VII	Profit and Loss				0	
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
VIII	Estimation and Costing				8	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL R	EVISED HOURS	26	

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: STONE MINING MACHINE OPERATOR

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				4	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Deleted		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Partially retained		

5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Partially retained		
IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
٧	Speed and Velocity, Work, Power and Energy				2	
1	Speed and velocity Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				2	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained	-	
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Partially retained		
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		

3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	Mensuration				8	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				2	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
Х	Trigonometry				0	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49			
			TOTAL REVISE	DHOURS	32	

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: STONE PROCESSING MACHINE OPERATOR

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				4	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Deleted		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Partially retained		

5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Partially retained		
IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
٧	Speed and Velocity, Work, Power and Energy				2	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				2	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained	-	
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Partially retained		
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		

			TOTAL REV	ISED HOURS	34	
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49			
3	Trigonometrical tables	162-172	1.10.48	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
1	Measurement of angles	154-155	1.10.46	Retained		
X	Trigonometry				2	
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
IX	Levers and Simple machines				2	
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
VIII	Mensuration				8	
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : SURVEYOR (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Deleted		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		

IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
٧	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between	61-64	1.5.22			
	speed and velocity, acceleration and retardation					
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23			
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24			
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25			
VI	Heat & Temperature and Pressure				6	
1	Concept of heat and temperature, effects of heat, difference between	74-75	1.6.26	Retained		
	heat and temperature, boiling point & melting point of different metals					
	and non-metals					
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between	76-77	1.6.27	Retained		
	scales of temperature					
3	Heat &Temperature - Temperature measuring instruments, types of	78-79		Deleted		
	thermometer, pyrometer and transmission of heat - Conduction, convection and radiation		1.6.28			
		00.04	4.6.20	D. at all		
4	Co-efficient of linear expansion <del>and related problems with assignments</del>	80-81	1.6.29	Partially retained		
_	Duchlane of heat less and heat gain with assignments	02.05	1.6.20			
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity	00	4 7 00		0	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance	98	1.7.33			
	and their units					
2		102-107	1.7.34			
2	Conductor, insulator, types of connections—series and parallel	102-107	1.7.34			

3	Ohm's law, relation between V.I.R & related problems	108	1.7.35		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38		
VIII	Mensuration			10	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39		
2	Area and perimeter of Triangles	125-129	1.8.40		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43		
IX	Levers and Simple machines			0	
1	Simple machines – Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45		
X	Trigonometry			6	
1	Measurement of angles	154-155	1.10.46		
2	Trigonometrical ratios	156-161	1.10.47		
3	Trigonometrical tables	162-172	1.10.48		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49		
			TOTAL REVISED HOURS	40	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : SURVEYOR (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
ı	Friction				0	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Deleted		
2	Friction - Lubrication	811	2.1.02	Deleted		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Deleted		
II	Centre of Gravity				0	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04			
III	Area of cut out regular surfaces and area of irregular surfaces				14	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Retained		
IV	Algebra				12	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
٧	Elasticity				0	

			TOTAL REVISED HOURS		40	
2	Estimation and costing - Problems on estimation and costing	92	2.8.17			
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16			
VIII	Estimation and Costing				10	
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Retained		
VII	Profit and Loss				4	
_	tempering, annealing, normalising and case hardening					
2	Heat treatment - Different heat treatment process – Hardening,	5866	2.6.13	Deleted		
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
VI	Heat Treatment				0	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Deleted		

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : TECHNICIAN ELECTRONICS SYSTEM DESIGN AND REPAIR (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				0	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		

IV	Mass, Weight, Volume and Density				0	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Partially		
				deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
V	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between	61-64	1.5.22	Deleted		
	speed and velocity, acceleration and retardation					
2	Speed and velocity Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Retained		
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between	74-75	1.6.26	Retained		
	heat and temperature, boiling point & melting point of different metals					
	and non-metals					
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between	76-77	1.6.27	Retained		
	scales of temperature					
3	Heat &Temperature - Temperature measuring instruments, types of	78-79		Deleted		
	thermometer, pyrometer and transmission of heat - Conduction,		1.6.28			
	convection and radiation					
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute	88-97	1.6.32	Deleted		
	pressure, gauge pressure and gauges used for measuring pressure					
VII	Basic Electricity				12	
1	Introduction and uses of electricity, molecule, atom, how electricity is	98	1.7.33	Retained		
	produced, electric current AC,DC their comparison, voltage, resistance and					
	their units					
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		

			TOTAL REVISED HOURS		29	
<b>-</b>	Application in calculating height and distance (Simple applications)	1,31,1				
4	Application in calculating height and distance (Simple applications)	173-177	1.10.48	Deleted		
3	Trigonometrical ratios  Trigonometrical tables	156-161 162-172	1.10.47 1.10.48	Retained Retained		
1	Measurement of angles	154-155	1.10.46	Retained	3	
X	Trigonometry	130 133	1.5.45		3	
2	Lever & Simple machines – Lever and its types	150-153	1.9.45	Retained		
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
IX	Levers and Simple machines				0	
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
VIII	Mensuration				0	
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		

### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: TECHNICIAN ELECTRONICS SYSTEM DESIGN AND REPAIR (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	Friction				0	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Deleted		
2	Friction - Lubrication	811	2.1.02	Deleted		
3	Friction Co-efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Deleted		
II	Centre of Gravity				0	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Deleted		
Ш	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		
IV	Algebra				8	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
٧	Elasticity				0	

VII 1	Profit and Loss  Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted	0	
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
VIII	Estimation and Costing				8	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		16	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : TECHNICIAN MECHATRONICS (1st Year)

Sr.	Title of the Exercise	Page No.	Exercise	To be	Revised	Remarks/ Justification
No.			No.	Retained /	Hours	
				Deleted		
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		Number systems
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
Ш	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	Mass, Weight, Volume and Density				2	

1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Partially deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
٧	Speed and Velocity, Work, Power and Energy				6	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Retained		
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				8	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		

2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
Х	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		

	4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
ĺ				TOTAL REVISED HOURS		36	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : TECHNICIAN MECHATRONICS (1st Year)

Sr.	Title of the Exercise	Page No.	Exercise No.	To be	Revised	Remarks/ Justification
No.				Retained /	Hours	
				Deleted		
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		Number systems
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	Mass, Weight, Volume and Density				2	

2     Related problems for mass, volume, density, weight and specific gravity     55-60     1.4.21     Deleted       V     Speed and Velocity, Work, Power and Energy     6       1     Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity - Related problems on speed & velocity     65-68     1.5.23     Retained       2     Speed and velocity - Related problems on speed & velocity     69-71     1.5.24     Retained       3     Work, power, energy, HP, IHP, BHP and efficiency     69-71     1.5.25     Retained       4     Potential energy, kinetic energy- and related problems with assignment     72-73     1.5.25     Retained       VI     Heat & Temperature and Pressure     74-75     1.6.26     Retained       1     Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals     76-77     1.6.26     Retained       2     Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature and transmission of heat - Conduction, convection and radiation     78-79     1.6.27     Deleted       3     Heat & Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation     80-81     1.6.29     Deleted       5     Problem of heat-loss and heat gain with assignments     82-85     1.6.30	1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Partially deleted		
1 Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation 2 Speed and velocity, acceleration and retardation 3 Work, power, energy, HP, IHP, BHP and efficiency 4 Potential energy, kinetic energy and related problems with assignment 72-73 1.5.24 Retained 74 Potential energy, kinetic energy and related problems with assignment 72-73 1.5.25 Retained 74 Potential energy, kinetic energy and related problems with assignment 72-73 1.5.25 Retained 74 Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals 74-75 1.6.26 Retained 74-75 1.6.27 Retained 75-77 1.6.27 Retained 85 Cacles of temperature. Celsius, Fahrenheit, kelvin and conversion between scales of temperature Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation 80-81 1.6.29 Deleted 80-81 1.6.30 Deleted 80-87 1.6.31 Deleted 80-87 1.6.31 Deleted 90-88-97 1.6.32 Deleted 91-88-97 1.6.32 Deleted 91-88-97 1.6.33 Deleted 92-88-97 1.6.33 Deleted 93-88-97 1.6.33 Retained 94 1.6.32 Deleted 95-97-98-98-98-98-98-98-98-99-98-98-99-98-98-	2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
speed and velocity, acceleration and retardation  Speed and velocity - Related problems on speed & velocity  Work, power, energy, HP, IHP, BHP and efficiency  Potential energy, kinetic energy and related problems with assignment  Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals  Concept of heat and temperature difference between heat and temperature, celsius, Fahrenheit, kelvin and conversion between scales of temperature enaburing instruments, types of thermometer, pyrometer and transmission of heat — Conduction, convection and radiation  4 Co-efficient of linear expansion and related problems with assignments  Problem of heat loss and heat gain with assignments  Concept of pressure — Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  VII Basic Electricity  Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  Conductor, insulator, types of connections - series and parallel  Description — Service — Servi	٧	Speed and Velocity, Work, Power and Energy				6	
3 Work, power, energy, HP, IHP, BHP and efficiency   69-71   1.5.24   Retained	1		61-64	1.5.22	Retained		
4 Potential energy, kinetic energy and related problems with assignment VI Heat & Temperature and Pressure 1 Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals 2 Scales of temperature Celsius, Fahrenheit, kelvin and conversion between scales of temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation 4 Co-efficient of linear expansion and related problems with assignments 5 Problem of heat-loss-and heat gain with assignments 6 Thermal conductivity and insulators 7 Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure VII Basic Electricity 8 Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units 2 Conductor, insulator, types of connections - series and parallel 102-107 1.7.34 Retained	2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
VI     Heat & Temperature and Pressure     4       1     Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals     74-75     1.6.26     Retained       2     Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature     76-77     1.6.27     Retained       3     Heat & Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation     78-79     Deleted       4     Co-efficient of linear expansion and related problems with assignments     80-81     1.6.29     Deleted       5     Problem of heat loss and heat gain with assignments     82-85     1.6.30     Deleted       6     Thermal conductivity and insulators     86-87     1.6.31     Deleted       7     Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure     88-97     1.6.32     Deleted       VII     Basic Electricity     8       1     Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units     98     1.7.33     Retained       2     Conductor, insulator, types of connections - series and parallel     102-107     1.7.34     Retained	3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
1 Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals  2 Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature  3 Heat & Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation  4 Co-efficient of linear expansion and related problems with assignments  5 Problem of heat loss and heat gain with assignments  6 Thermal conductivity and insulators  7 Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  VII Basic Electricity  1 1.6.26 Retained  7 1.6.27 Retained  8 0-8.79  1.6.28  1.6.28  1.6.29 Deleted  8 2-8.5 1.6.30 Deleted  8 3-8.7 1.6.31 Deleted  9 1.6.32 Deleted  9 1.6.33 Retained  1 1.6.34 Retained	4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Retained		
heat and temperature, boiling point & melting point of different metals and non-metals  2 Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature measuring instruments, types of thermometer, pyrometer and transmission of heat – Conduction, convection and radiation  4 Co-efficient of linear expansion and related problems with assignments  5 Problem of heat loss and heat gain with assignments  6 Thermal conductivity and insulators  7 Concept of pressure – Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  VII Basic Electricity  Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  2 Conductor, insulator, types of connections - series and parallel  7 Conductor, insulator, types of connections - series and parallel  102-107 1.7.34 Retained	VI	Heat & Temperature and Pressure				4	
between scales of temperature  3	1	heat and temperature, boiling point & melting point of different metals	74-75	1.6.26	Retained		
thermometer, pyrometer and transmission of heat - Conduction, convection and radiation  4	2	·	76-77	1.6.27	Retained		
5 Problem of heat loss and heat gain with assignments 6 Thermal conductivity and insulators 7 Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  VII Basic Electricity  1 Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  2 Conductor, insulator, types of connections - series and parallel  82-85 1.6.30 Deleted  1.6.32 Deleted  88-97 1.6.32 Beleted  8 1.7.33 Retained  1.7.34 Retained	3	thermometer, pyrometer and transmission of heat - Conduction,	78-79	1.6.28	Deleted		
6 Thermal conductivity and insulators 7 Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  VII Basic Electricity 1 Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units 2 Conductor, insulator, types of connections - series and parallel 1 102-107 1.7.34 Retained	4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
7 Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  VII Basic Electricity  Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  2 Conductor, insulator, types of connections - series and parallel  1.6.32 Deleted  8  1.7.33 Retained	5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
pressure, gauge pressure and gauges used for measuring pressure         VII       Basic Electricity       8         1       Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units       98       1.7.33       Retained         2       Conductor, insulator, types of connections - series and parallel       102-107       1.7.34       Retained	6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
1 Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  2 Conductor, insulator, types of connections - series and parallel  102-107  1.7.34  Retained  Retained	7		88-97	1.6.32	Deleted		
produced, electric current AC,DC their comparison, voltage, resistance and their units  2 Conductor, insulator, types of connections - series and parallel  102-107 1.7.34 Retained	VII	Basic Electricity				8	
	1	produced, electric current AC,DC their comparison, voltage, resistance	98	1.7.33	Retained		
3 Ohm's law, relation between V.I.R & related problems 108 1.7.35 Retained	2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
	3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		

4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVISE	HOURS	36	

### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: TECHNICIAN MEDICAL ELECTRONICS (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		

1 Mass, volume, density, weight and specific gravity 2 Related problems for mass, volume, density, weight and specific gravity 55-60 1.4.21 Deleted V Speed and Velocity, Work, Power and Energy 1 Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation 2 Speed and velocity - Related problems on speed & velocity 3 Work, power, energy, HP, IHP, BHP and efficiency 4 Potential energy, kinetic energy and related problems with assignment VI Heat & Temperature and Pressure 1 Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals 2 Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between 76-77 1.6.27 Retained	
2 Related problems for mass, volume, density, weight and specific gravity  V Speed and Velocity, Work, Power and Energy  1 Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation  2 Speed and velocity - Related problems on speed & velocity  3 Work, power, energy, HP, IHP, BHP and efficiency  4 Potential energy, kinetic energy and related problems with assignment  VI Heat & Temperature and Pressure  1 Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	
VSpeed and Velocity, Work, Power and Energy01Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation61-641.5.22Deleted2Speed and velocity - Related problems on speed & velocity65-681.5.23Deleted3Work, power, energy, HP, IHP, BHP and efficiency69-711.5.24Retained4Potential energy, kinetic energy and related problems with assignment72-731.5.25RetainedVIHeat & Temperature and Pressure74-751.6.26Retained1Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals74-751.6.26Retained	
Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation  Speed and velocity - Related problems on speed & velocity  Work, power, energy, HP, IHP, BHP and efficiency  Potential energy, kinetic energy and related problems with assignment  VI Heat & Temperature and Pressure  Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals  Speed and velocity - Rest, motion, speed, velocity, difference between 61-64  1.5.22 Deleted  1.5.23 Deleted  1.5.24 Retained  4  1.5.25 Retained  4	
speed and velocity, acceleration and retardation65-681.5.23Deleted3Work, power, energy, HP, IHP, BHP and efficiency69-711.5.24Retained4Potential energy, kinetic energy and related problems with assignment72-731.5.25RetainedVIHeat & Temperature and Pressure41Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals74-751.6.26Retained	
2 Speed and velocity Related problems on speed & velocity 3 Work, power, energy, HP, IHP, BHP and efficiency 4 Potential energy, kinetic energy and related problems with assignment VI Heat & Temperature and Pressure 1 Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals  1.5.23 Deleted 69-71 1.5.24 Retained 72-73 1.5.25 Retained 74-75 1.6.26 Retained	
3 Work, power, energy, HP, IHP, BHP and efficiency 4 Potential energy, kinetic energy and related problems with assignment 72-73 1.5.25 Retained  VI Heat & Temperature and Pressure 1 Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals  1.5.24 Retained 72-73 1.5.25 Retained  4	
4 Potential energy, kinetic energy and related problems with assignment  VI Heat & Temperature and Pressure  1 Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals  1.5.25 Retained  74-75  1.6.26 Retained	
VI Heat & Temperature and Pressure  1 Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals  1.6.26 Retained	
Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals  74-75  1.6.26  Retained	
heat and temperature, boiling point & melting point of different metals and non-metals	
and non-metals	
2   Scales of temperature Celsius Fahrenheit kelvin and conversion between   76-77   1 6 27   Retained	
scales of temperature	
3 Heat &Temperature - Temperature measuring instruments, types of 78-79 Deleted	
thermometer, pyrometer and transmission of heat - Conduction,  1.6.28	
convection and radiation	
4 Co-efficient of linear expansion and related problems with assignments 80-81 1.6.29 Deleted	
5 Problem of heat loss and heat gain with assignments 82-85 1.6.30 Deleted	
6 Thermal conductivity and insulators 86-87 1.6.31 Deleted	
7 Concept of pressure - Units of pressure, atmospheric pressure, absolute 88-97 1.6.32 Deleted	
pressure, gauge pressure and gauges used for measuring pressure	
VII Basic Electricity 12	
1 Introduction and uses of electricity, molecule, atom, how electricity is 98 1.7.33 Retained	
produced, electric current AC,DC their comparison, voltage, resistance	
and their units	
2 Conductor, insulator, types of connections - series and parallel 102-107 1.7.34 Retained	
3 Ohm's law, relation between V.I.R & related problems 108 1.7.35 Retained	

_			TOTAL RE	EVISED HOURS	36	
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
3	Trigonometrical tables	162-172	1.10.48	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
1	Measurement of angles	154-155	1.10.46	Retained		
Х	Trigonometry				4	
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
	mechanical advantage					
-	efficiency of machine, relationship between efficiency, velocity ratio and	140 143	1.3.77	Deleted		
1	Simple machines - Effort and load, mechanical advantage, velocity ratio,	148-149	1.9.44	Deleted	0	
IX	Levers and Simple machines				0	
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
7	hollow cylinder	130-144	1.0.42	Deleted		
4	Surface area and volume of solids—cube, cuboid, cylinder, sphere and	138-144	1.8.42	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
VIII	Mensuration				0	
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: TECHNICIAN MEDICAL ELECTRONICS (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	Friction				0	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Deleted		
2	Friction - Lubrication	811	2.1.02	Deleted		
3	Friction Co-efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Deleted		
II	Centre of Gravity				0	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Deleted		
Ш	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		
IV	Algebra				8	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
V	Elasticity				0	

			TOTAL RE	VISED HOURS	20	
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
VIII	Estimation and Costing				12	
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
VII	Profit and Loss				0	
2	Heat treatment - Different heat treatment process - Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Deleted		
	,					
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
VI	Heat Treatment				0	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : TECHNICIAN POWER ELECTRONIC SYSTEMS (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		

IV	Mass, Weight, Volume and Density				0	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
V	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between	61-64	1.5.22	Deleted		
	speed and velocity, acceleration and retardation					
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat	74-75	1.6.26	Retained		
	and temperature, boiling point & melting point of different metals and non-metals					
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	•	78-79		Deleted		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction,	78-79	1 ( 20	Deleted		
	convection and radiation		1.6.28			
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute	88-97	1.6.32	Deleted		
	pressure, gauge pressure and gauges used for measuring pressure					
VII	Basic Electricity				12	
1	Introduction and uses of electricity, molecule, atom, how electricity is	98	1.7.33	Retained		
	produced, electric current AC,DC their comparison, voltage, resistance and					
	their units					
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		

5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
Х	Trigonometry				3	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL R	EVISED HOURS	33	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : TECHNICIAN POWER ELECTRONIC SYSTEMS (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
ı	Friction				0	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Deleted		
2	Friction - Lubrication	811	2.1.02	Deleted		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Deleted		
II	Centre of Gravity				0	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Deleted		
III	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		
IV	Algebra				8	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
٧	Elasticity				0	

			TOTAL RE	VISED HOURS	16	
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
VIII	Estimation and Costing				8	
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
VII	Profit and Loss				0	
2	Heat treatment - Different heat treatment process - Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Deleted		
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
VI	Heat Treatment				0	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : TEXTILE MECHATRONICS (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		Number systems
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		

5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		
IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Partially deleted		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
٧	Speed and Velocity, Work, Power and Energy				6	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Retained		
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				8	

1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL RE	VISED HOURS	36	

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: TEXTILE MECHATRONICS (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
1	Friction				0	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Deleted		
2	Friction Lubrication	811	2.1.02	Deleted		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Deleted		
II	Centre of Gravity				0	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Deleted		
Ш	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		
IV	Algebra				8	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		
٧	Elasticity				0	

			TOTAL REVISED HOURS		16	
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
VIII	Estimation and Costing				8	
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
VII	Profit and Loss				0	
-	tempering, annealing, normalising and case hardening					
2	Heat treatment - Different heat treatment process – Hardening,	5866	2.6.13	Deleted		
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
VI	Heat Treatment				0	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: TEXTILE WET PROCESSING TECHNICIAN (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI book s' Exerc ise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.0	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.0	Retained		
3	Measurement units and conversion	413	1.1.0 3	Retained		
4	Factors, HCF, LCM and problems	14	1.1.0	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.0 5	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.0 6	Retained		
7	Solving problems by using calculator	20-26	1.1.0 7	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.0 8	Retained		
2	Simple problems using calculator	28	1.2.0 9	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.1	Retained		

4	Ratio and proportion	30-31	1.2.1	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.1	Retained		
6	Percentage	36-38	1.2.1 3	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.1 4	Retained		
Ш	Material Science				4	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.1 5	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.1 6	Retained		
3	Introduction of iron and cast iron	45-47	1.3.1 7	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.1 8	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.1 9	Deleted		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.2 0	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.2 1	Retained		
V	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.2 2	Retained		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.2 3	Retained		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.2 4	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.2 5	Deleted		

VI	Heat & Temperature and Pressure				6	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.2 6	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.2 7	Retained		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.2	Retained		
4	Co efficient of linear expansion and related problems with assignments	80-81	1.6.2 9	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.3 0	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.3 1	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.3 2	Retained		
VII	Basic Electricity				4	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.3	Retained		Only basics to be taught
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.3 4	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.3 5	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.3 6	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.3 7	Retained		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.3 8	Retained		

VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.3 9	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.4 0	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.4 1	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.4	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.4 3	Deleted		
IX	Levers and Simple machines				0	
1	Simple machines – Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.4 4	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.4 5	Deleted		
Х	Trigonometry				2	
1	Measurement of angles	154-155	1.10. 46	Retained		
2	Trigonometrical ratios	156-161	1.10. 47	Retained		
3	Trigonometrical tables	162-172	1.10. 48	Deleted		
4	Application in calculating height and distance (Simple applications)	173-177	1.10. 49	Deleted		
			TOTAL HOUR	. REVISED S	30	

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: TEXTILE WET PROCESSING TECHNICIAN (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books ' Exerci se No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
ı	Friction				2	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.0	Retained		Should be taught in 1st Year with basics
2	Friction - Lubrication	811	2.1.0	Retained		Should be taught in 1st Year with basics
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.0	Retained		Should be taught in 1st Year with basics
II	Centre of Gravity				0	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.0	Deleted		
III	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.0	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.0 6	Deleted		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.0	Deleted		
IV	Algebra				6	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.0	Retained		

			TOTAL REVISED HOURS		18	
2	Estimation and costing - Problems on estimation and costing	92	2.8.1			
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.1 6			
VIII	Estimation and Costing				10	
2	Profit and loss - Simple and compound interest	7384	2.7.1 5	Deleted		
1	Profit and loss - Simple problems on profit & loss	6772	2.7.1 4	Deleted		
VII	Profit and Loss				0	
	tempering, annealing, normalising and case hardening		3			
2	Heat treatment - Different heat treatment process – Hardening,	5866	2.6.1	Deleted		
1	Heat treatment and advantages	56-57	2.6.1	Deleted		
VI	Heat Treatment				0	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.1 1	Deleted		
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.1 0	Deleted		
V	Elasticity				0	
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.0 9	Retained		

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : TOOL & DIE MAKER (DIES & MOULDS) (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		Only direct problems
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained		

5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		
IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
٧	Speed and Velocity, Work, Power and Energy				2	
1	Speed and velocity—Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		Definition only
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Retained		
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Partially retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Partially retained		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Deleted		
VII	Basic Electricity				2	

1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				8	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				2	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	Trigonometry					
1	Measurement of angles	154-155	1.10.46	Retained	4	
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL RI	EVISED HOURS	40	

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : TOOL & DIE MAKER (DIES & MOULDS) (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	Friction				6	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		Not to be taught in detail
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Retained		
II	Centre of Gravity				4	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
III	Area of cut out regular surfaces and area of irregular surfaces				8	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Retained		
IV	Algebra				0	Already covered in 1st year
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Deleted		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Deleted		
٧	Elasticity				8	

			TOTAL R	EVISED HOURS	34	
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
VIII	Estimation and Costing				6	
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
VII	Profit and Loss				0	
2	Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Retained		Only overview required
1	Heat treatment and advantages	56-57	2.6.12	Retained		Only overview required
VI	Heat Treatment				2	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : TOOL & DIE MAKER (PTJ&F) (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI book s' Exerc ise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.0	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.0	Retained		
3	Measurement units and conversion	413	1.1.0	Retained		
4	Factors, HCF, LCM and problems	14	1.1.0	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.0 5	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.0	Retained		
7	Solving problems by using calculator	20-26	1.1.0	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.0 8	Retained		
2	Simple problems using calculator	28	1.2.0 9	Retained		Only direct problems
3	Applications of Pythagoras theorem and related problems	29	1.2.1	Retained		

4	Ratio and proportion	30-31	1.2.1 1	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.1	Retained		
6	Percentage	36-38	1.2.1 3	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.1 4	Retained		
Ш	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.1 5	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.1 6	Retained		
3	Introduction of iron and cast iron	45-47	1.3.1 7	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.1 8	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.1 9	Retained		
IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.2 0	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.2 1	Deleted		
٧	Speed and Velocity, Work, Power and Energy				2	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.2 2	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.2 3	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.2 4	Retained		Definition only
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.2 5	Retained		

VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.2	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.2 7	Deleted		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.2	Partially retained		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.2 9	Partially retained		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.3	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.3 1	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.3 2	Deleted		
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.3	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.3 4	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.3 5	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.3 6	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.3 7	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.3 8	Deleted		
VIII	Mensuration				8	

1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.3 9	Retained		
2	Area and perimeter of Triangles	125-129	1.8.4	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.4 1	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.4	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.4 3	Retained		
IX	Levers and Simple machines				2	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.4 4	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.4 5	Retained		
Х	Trigonometry					
1	Measurement of angles	154-155	1.10. 46	Retained	4	
2	Trigonometrical ratios	156-161	1.10. 47	Retained		
3	Trigonometrical tables	162-172	1.10. 48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10. 49	Deleted		
			TOTAL REVISED HOURS		40	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : TOOL & DIE MAKER (PTJ&F) (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books ' Exerci se No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
I	Friction				6	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.0	Retained		Not to be taught in detail
2	Friction - Lubrication	811	2.1.0	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.0	Retained		
II	Centre of Gravity				4	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.0 4	Retained		
Ш	Area of cut out regular surfaces and area of irregular surfaces				8	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.0 5	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.0 6	Retained		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.0 7	Retained		
IV	Algebra				0	Already covered in 1st year
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.0 8	Deleted		

			TOTAL REVISED HOURS		34	
2	Estimation and costing - Problems on estimation and costing	92	2.8.1 7	Retained	34	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.1 6	Retained		
VIII	Estimation and Costing				6	
2	Profit and loss - Simple and compound interest	7384	2.7.1 5	Deleted		
1	Profit and loss - Simple problems on profit & loss	6772	2.7.1 4	Deleted		
VII	Profit and Loss				0	
	tempering, annealing, normalising and case hardening		3			,
2	Heat treatment - Different heat treatment process – Hardening,	5866	2.6.1	Retained		Only overview required
1	Heat treatment and advantages	56-57	2.6.1	Retained		Only overview required
VI	Heat Treatment				2	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.1 1	Retained		
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.1 0	Retained		
٧	Elasticity				8	
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.0 9	Deleted		

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : TURNER (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI book s' Exerc ise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.0 1	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.0	Retained		
3	Measurement units and conversion	413	1.1.0 3	Retained		
4	Factors, HCF, LCM and problems	14	1.1.0 4	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.0 5	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.0 6	Retained		
7	Solving problems by using calculator	20-26	1.1.0 7	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.0 8	Retained		
2	Simple problems using calculator	28	1.2.0 9	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.1	Retained		

4	Ratio and proportion	30-31	1.2.1	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.1	Retained		
6	Percentage	36-38	1.2.1	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.1 4	Retained		
Ш	Material Science				6	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.1 5	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.1 6	Retained		
3	Introduction of iron and cast iron	45-47	1.3.1 7	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.1 8	Retained		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.1 9	Deleted		
IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity, numericals realted to sections L,C O.	53-54	1.4.2 0	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.2 1	Deleted		
٧	Speed and Velocity, Work, Power and Energy				2	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.2 2	Deleted		
2	Speed and velocity Related problems on speed & velocity	65-68	1.5.2 3	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.2 4	Retained		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.2 5	Deleted		

VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.2 6	Deleted		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.2 7	Deleted		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.2	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.2 9	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.3 0	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.3 1	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.3 2	Retained		
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.3	Partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.3 4	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.3 5	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.3 6	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.3 7	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.3 8	Deleted		

VIII	Mensuration				8	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.3 9	Retained		
2	Area and perimeter of Triangles	125-129	1.8.4 0	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.4 1	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.4	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.4 3	Deleted		
IX	Levers and Simple machines				2	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.4 4	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.4 5	Retained	4	
Х	Trigonometry					
1	Measurement of angles	154-155	1.10. 46	Retained		
2	Trigonometrical ratios	156-161	1.10. 47	Retained		
3	Trigonometrical tables	162-172	1.10. 48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10. 49	Deleted		
			TOTAL REVISED HOURS		40	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : TURNER (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books ' Exerci se No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
ı	Friction				6	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.0	Retained		
2	Friction - Lubrication	811	2.1.0	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.0	Retained		
II	Centre of Gravity				4	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.0	Retained		
III	Area of cut out regular surfaces and area of irregular surfaces				8	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.0	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.0 6	Retained		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.0 7	Retained		
IV	Algebra				0	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.0	Deleted		Already covered in 1st year

			TOTAL REVISED HOURS		34	
2	Estimation and costing - Problems on estimation and costing	92	2.8.1	Retained	24	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.1 6	Retained	6	
VIII	Estimation and Costing					
2	Profit and loss - Simple and compound interest	7384	2.7.1 5	Deleted		
1	Profit and loss - Simple problems on profit & loss	6772	2.7.1 4	Deleted		
VII	Profit and Loss				0	
	tempering, annealing, normalising and case hardening		3			, , , , , , , , , , , , , , , , , , , ,
2	Heat treatment - Different heat treatment process – Hardening,	5866	2.6.1	Deleted		Part of theory syllabus
1	Heat treatment and advantages	56-57	2.6.1	Retained		Only basics
VI	Heat Treatment				2	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.1 1	Retained		
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.1 0	Retained		
V	Elasticity				8	
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.0 9	Deleted		Already covered in 1st year

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : VESSEL NAVIGATOR (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retaine d / Deleted	Revis ed Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retaine d		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retaine d		
3	Measurement units and conversion	413	1.1.03	Retaine d		
4	Factors, HCF, LCM and problems	14	1.1.04	Retaine d		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retaine d		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retaine d		
7	Solving problems by using calculator	20-26	1.1.07	Retaine d		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retaine d		
2	Simple problems using calculator	28	1.2.09	Retaine d		Only direct solving problems
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retaine d		
4	Ratio and proportion	30-31	1.2.11	Retaine d		

5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retaine d	
6	Percentage	36-38	1.2.13	Retaine d	
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retaine d	
Ш	Material Science				0
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Deleted	
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted	
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted	
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted	
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted	
IV	Mass, Weight, Volume and Density				4
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retaine d	
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retaine d	
٧	Speed and Velocity, Work, Power and Energy				2
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted	
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted	
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retaine d	
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted	
VI	Heat & Temperature and Pressure				4
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retaine d	
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted	

3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat—Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retaine d		
VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Partially retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		

5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				2	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Retaine d		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Deleted		
Х	Trigonometry				6	
1	Measurement of angles	154-155	1.10.46	Retaine d		
2	Trigonometrical ratios	156-161	1.10.47	Retaine d		
3	Trigonometrical tables	162-172	1.10.48	Retaine d		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVIS	SED HOURS	30	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: VESSEL NAVIGATOR (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
ı	Friction				6	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		Not to be taught in detail
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Retained		
II	Centre of Gravity				4	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
III	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		
IV	Algebra				0	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Deleted		Already covered in 1 st year
2	Algebra Theory of indices, algebraic formula, related problems	3640	2.4.09	Deleted		
V	Elasticity				2	

			TOTAL REVISED HOURS		18	
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
VIII	Estimation and Costing				6	
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Deleted		
VII	Profit and Loss				0	
2	Heat treatment Different heat treatment process — Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Retained		Only intro as covered in theory
1	Heat treatment and advantages	56-57	2.6.12	Retained		Only intro as covered in theory
VI	Heat Treatment				0	
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: WAREHOUSE TECHNICIAN

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		Simple calculations only
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				2	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		

IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity, <b>numerical related to L,C,O section only</b>	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		Only basics
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat—Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		Basics only
VII	Basic Electricity				12	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		

5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				4	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				6	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Retained		Only Basics
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
Х	Trigonometry				0	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		40	

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: WEAVING TECHNICIAN (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
-	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				0	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Deleted		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		
3	Introduction of iron and cast iron	45-47	1.3.17	Deleted		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		

IV	Mass, Weight, Volume and Density				2	
1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		Only basic problems
V	Speed and Velocity, Work, Power and Energy				0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		Only basic
VI	Heat & Temperature and Pressure				4	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Deleted		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Retained		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Retained		
VII	Basic Electricity				6	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		

5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
6	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				0	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Deleted		
2	Area and perimeter of Triangles	125-129	1.8.40	Deleted		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Deleted		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Deleted		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				2	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		Only Basics
Х	Trigonometry				0	
1	Measurement of angles	154-155	1.10.46	Deleted		
2	Trigonometrical ratios	156-161	1.10.47	Deleted		
3	Trigonometrical tables	162-172	1.10.48	Deleted		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		24	

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: WEAVING TECHNICIAN (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
ı	Friction				4	
1	Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Retained		Only theory
2	Friction - Lubrication	811	2.1.02	Retained		Only theory
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Deleted		
II	Centre of Gravity				0	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Retained		
III	Area of cut out regular surfaces and area of irregular surfaces				6	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Retained		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Retained		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		
IV	Algebra				0	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Deleted		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Deleted		
V	Elasticity				8	

1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Retained		
VI	Heat Treatment				0	
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
2	Heat treatment - Different heat treatment process – Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Deleted		
VII	Profit and Loss				0	
1	Profit and loss Simple problems on profit & loss	6772	2.7.14	Deleted		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Deleted		
VIII	Estimation and Costing				10	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		28	

#### REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADES :

- 1. Welder (NSQF Level 4, 2. Welder (GMAW & GTAW) (NSQF Level 3)
- 3. Welder (Pipe) (NSQF Level 3), 4. Welder (Structural) (NSQF Level 3)
- 5. Welder (Fabrication & Fitting) (NSQF Level 3), 6. Welder (Welding & Inspection) (NSQF Level 3)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
I	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage					
1	Square and square root	27	1.2.08	Retained	6	
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				6	

1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Retained		
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Retained Partially		
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Retained		
IV	Mass, Weight, Volume and Density				4	
1	Mass, volume, density, weight and specific gravity, numericals realted to sections L,C O.	53-54	1.4.20	Retained		
2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Retained		
V	Speed and Velocity, Work, Power and Energy			Deleted	0	
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	61-64	1.5.22	Deleted		
2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Deleted		
4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Deleted		
VI	Heat & Temperature and Pressure				6	
1	Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals	74-75	1.6.26	Retained		
2	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	76-77	1.6.27	Deleted		
3	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	78-79	1.6.28	Retained Partially		
4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Retained		
5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
7	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	88-97	1.6.32	Partially retained		

VII	Basic Electricity				2	
1	Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units	98	1.7.33	Retained Partially		
2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Deleted		
3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Deleted		
4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Deleted		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Deleted		
VIII	Mensuration				8	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Retained		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	Trigonometry				2	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REV	TOTAL REVISED HOURS		

## REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE: WIREMAN (1st Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Deleted	Revised Hours	Remarks/ Justification
ı	Unit, Fractions				4	
1	Classification of unit system	1	1.1.01	Retained		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	23	1.1.02	Retained		
3	Measurement units and conversion	413	1.1.03	Retained		
4	Factors, HCF, LCM and problems	14	1.1.04	Retained		
5	Fractions - Addition, subtraction, multiplication & division	1516	1.1.05	Retained		
6	Decimal fractions - Addition, subtraction, multiplication & division	17-19	1.1.06	Retained		
7	Solving problems by using calculator	20-26	1.1.07	Retained		
II	Square root, Ratio and Proportions, Percentage				6	
1	Square and square root	27	1.2.08	Retained		
2	Simple problems using calculator	28	1.2.09	Retained		
3	Applications of Pythagoras theorem and related problems	29	1.2.10	Retained		
4	Ratio and proportion	30-31	1.2.11	Retained		
5	Ratio and proportion - Direct and indirect proportions	32-35	1.2.12	Retained		
6	Percentage	36-38	1.2.13	Retained		
7	Percentage - Changing percentage to decimal and fraction	39	1.2.14	Retained		
Ш	Material Science				2	
1	Types metals, types of ferrous and non ferrous metals	40 -41	1.3.15	Retained		
2	Physical and mechanical properties of metals	42-44	1.3.16	Deleted		Covered in theory syllabus
3	Introduction of iron and cast iron	45-47	1.3.17	Retained		
4	Difference between iron & steel, alloy steel and carbon steel	48-49	1.3.18	Deleted		Covered in theory syllabus
5	Properties and uses of rubber, timber and insulating materials	50-52	1.3.19	Deleted		Covered in theory syllabus

Mass, volume, density, weight and specific gravity   S3-54   1.4.20   Partially deleted   Partially dele	IV	Mass, Weight, Volume and Density				2	
Related problems for mass, volume, density, weight and specific gravity  Speed and Velocity, Work, Power and Energy  Speed-and-velocity—Rest, motion, speed, velocity, difference between speed and velocity—Rest, motion, speed, velocity, difference between speed and velocity—Rest, motion, speed, velocity difference between speed and velocity—Related problems on speed & velocity  Nork, power, energy, HP, IHP, BHP and efficiency  Potential energy, kinetic energy and related problems with assignment  Potential energy, kinetic energy and related problems with assignment  Nore the at and temperature and Pressure  Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals  Scales of temperature  Retained  74-75  1.6.26  Retained  Retained  Retained  1.6.28  Retained  1.6.28  Retained  1.6.28  Retained  1.6.28  Deleted  1.6.	1	Mass, volume, density, weight and specific gravity	53-54	1.4.20	Partially		
V     Speed and Velocity, Work, Power and Energy     61-64     1.5.22     Deleted       1     Speed and velocity- Rest, motion, speed, velocity, difference between speed and velocity- Rest, motion, speed, velocity difference between speed and velocity- Related problems on speed & velocity     65-68     1.5.23     Deleted       2     Speed and velocity- Related problems on speed & velocity     69-71     1.5.24     Retained       3     Work, power, energy, HP, IHP, BHP and efficiency     69-71     1.5.25     Retained       4     Potential energy, kinetic energy and related problems with assignment     72-73     1.5.25     Retained       VI     Heat & Temperature and Pressure     74-75     1.6.26     Retained       1     Concept of heat and temperature, felfects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals     76-77     1.6.26     Retained       2     Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and related and telated problems with assignments     78-79     Deleted     Deleted       3     Heat & Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and related problems with assignments     80-81     1.6.29     Deleted       5     Problem of heat loss and heat gain					deleted		
Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation  Speed and velocity, acceleration and retardation  Speed and velocity, acceleration and retardation  Work, power, energy, HP, IHP, BHP and efficiency  Potential energy, kinetic energy and related problems with assignment  VI Heat & Temperature and Pressure  Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals  Scales of temperature. Celsius, Fahrenheit, kelvin and conversion between scales of temperature  Heat & Temperature — Temperature measuring instruments, types of the thermometer, pyrometer and transmission of heat — Conduction, convection and radiation  4 Co-efficient of linear expansion and related-problems with assignments  Problem of heat loss and heat gain with assignments  Problem of heat loss and heat gain with assignments  Thermal conductivity and insulators  Thermal conductivity and insulators  Sales Electricity  Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  Editor of the service of pressure and parallel  Potential production and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  Belating the desired problems and parallel  Potential production and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  Belating the desired problems and parallel  Potential energy kinctic energy and includence and parallel  Belating the desired problems and electricity is produced, electric current AC,DC their comparison, voltage, resistance and the problems and parallel  Potential energy kinctic energy and electricity is produced, electric current AC,DC their comparison, voltage, resistance and the problem	2	Related problems for mass, volume, density, weight and specific gravity	55-60	1.4.21	Deleted		
speed and velocity, acceleration and retardation     65-68     1.5.23     Deleted     65-68       Work, power, energy, HP, IHP, BHP and efficiency     69-71     1.5.24     Retained     65-68       Potential energy, kinetic energy and related problems with assignment     72-73     1.5.25     Retained     65-68       VI     Heat & Temperature and Pressure     72-73     1.5.25     Retained     74-75       Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals     76-77     1.6.26     Retained       Scales of temperature. Celsius, Fahrenheit, kelvin and conversion between scales of temperature Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation     78-79     1.6.28     Deleted     65-68       4 Coefficient of linear expansion and related problems with assignments     80-81     1.6.29     Deleted     65-68       5 Problem of heat loss and heat gain with assignments     80-81     1.6.30     Deleted     65-68       6 Thermal conductivity and insulators     86-87     1.6.31     Deleted     65-68       7 Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure     88-97     1.6.32     Deleted     65-68       8 Introduction and uses of electricity, melecule, atom, how electricity i	V	Speed and Velocity, Work, Power and Energy				2	
2 Speed and velocity - Related problems on speed & velocity 3 Work, power, energy, HP, IHP, BHP and efficiency 4 Potential energy, kinetic energy and related problems with assignment 72-73 1.5.24 Retained 72-73 1.5.25 Retained 72-73 1.5.25 Retained 72-73 1.5.25 Retained 72-73 1.5.25 Retained 73-75 1.6.26 Retained 74-75 1.6.26 Retained 74-75 1.6.26 Retained 74-75 1.6.26 Retained 74-75 1.6.27 Retained 74-75 1.6.27 Retained 74-75 1.6.27 Retained 74-75 1.6.27 Retained 75-79 1.6.27 Retained 76-79 1.6.27 Retained 76-79 1.6.28 Retained 76-79 1.6.29 Deleted 78-79 1.6.28 Retained 78-79 1.6.28 Retained 78-79 1.6.28 Retained 78-79 1.6.28 Retained 78-79 1.6.29 Deleted 78-79 1.6.28 Deleted 78-79 1.6.28 Deleted 78-79 1.6.29 Deleted 79-79 Deleted 79-79 1.6.30 Deleted 79-79 1.6.30 Deleted 79-79 1.6.31 Deleted 79-79 1.6.32 Deleted 79	1	, , , , , , , , , , , , , , , , , , , ,	61-64	1.5.22	Deleted		
Work, power, energy, HP, IHP, BHP and efficiency   69-71   1.5.24   Retained   Potential energy, kinetic energy and related problems with assignment   72-73   1.5.25   Retained		speed and velocity, acceleration and retardation					
4     Potential energy, kinetic energy and related problems with assignment     72-73     1.5.25     Retained       VI     Heat & Temperature and Pressure     74-75     1.6.26     Retained       1     Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals     74-75     1.6.26     Retained       2     Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature measuring instruments, types of thermometer, pyrometer and transmission of heat — Conduction, convection and radiation     78-79     Deleted       3     Heat & Temperature — Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat — Conduction, convection and radiation     80-81     1.6.29     Deleted       4     Co-efficient of linear expansion and related problems with assignments     82-85     1.6.30     Deleted       5     Problem of heat loss and heat gain with assignments     82-85     1.6.31     Deleted       6     Thermal conductivity and insulators     86-87     1.6.31     Deleted       7     Concept of pressure — Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure     88-97     1.6.32     Deleted       VII     Basic Electricity     98     1.7.33     Partially deleted       1     Introduction and uses of electricity, melecule, atom,	2	Speed and velocity - Related problems on speed & velocity	65-68	1.5.23	Deleted		
VI     Heat & Temperature and Pressure     4       1     Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals     74-75     1.6.26     Retained       2     Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation     78-79     Deleted       4     Co-efficient of linear expansion and related problems with assignments     80-81     1.6.29     Deleted       5     Problem of heat loss and heat gain with assignments     82-85     1.6.30     Deleted       6     Thermal conductivity and insulators     86-87     1.6.31     Deleted       7     Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure     88-97     1.6.32     Deleted       VII     Basic Electricity     98     1.7.33     Partially deleted       1     Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC, DC their comparison, voltage, resistance and their units     98     1.7.34     Retained       2     Conductor, insulator, types of connections - series and parallel     102-107     1.7.34     Retained	3	Work, power, energy, HP, IHP, BHP and efficiency	69-71	1.5.24	Retained		
Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals   1.6.26   Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature   1.6.27   Scales of temperature   1.6.27   Scales of temperature   1.6.28   Scales of temperature   1.6.29   Scales of temperature	4	Potential energy, kinetic energy and related problems with assignment	72-73	1.5.25	Retained		
heat and temperature, boiling point & melting point of different metals and non-metals  2 Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature  3 Heat & Temperature — Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat — Conduction, convection and radiation  4 Co-efficient of linear expansion and related problems with assignments  5 Problem of heat loss and heat gain with assignments  6 Thermal conductivity and insulators  7 Concept of pressure — Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  VII Basic Electricity  Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  2 Conductor, insulator, types of connections - series and parallel  102-107 1.7.34 Retained	VI	Heat & Temperature and Pressure				4	
and non-metals  Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature  Heat & Temperature — Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat—Conduction, convection and radiation  Co-efficient of linear expansion and related problems with assignments Problem of heat loss and heat gain with assignments Thermal conductivity and insulators  Concept of pressure—Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  Conductor, insulator, types of connections - series and parallel  102-107  1.6.27  Retained  Deleted  1.6.28  Deleted  D	1	· · · · · · · · · · · · · · · · · · ·	74-75	1.6.26	Retained		
Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature  3 Heat &Temperature — Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat — Conduction, convection and radiation  4 Co efficient of linear expansion and related problems with assignments  5 Problem of heat loss and heat gain with assignments  6 Thermal conductivity and insulators  7 Concept of pressure — Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  VII Basic Electricity  1 Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  2 Conductor, insulator, types of connections - series and parallel  1 1.6.27 Retained  1 1.6.28 Deleted  1 1.6.28 Deleted  1 1.6.29 Deleted  1 1.6.30 Deleted  1 1.6.31 Deleted  1 1.6.32 Deleted  1 1.6.32 Deleted  1 1.6.32 Deleted  1 1.6.33 Deleted  1 1.6.34 Deleted  1 1.6.35 Deleted  1 1.6.36 Deleted  1 1.6.37 Deleted  1 1.6.37 Deleted  1 1.6.38 Deleted  1 1.6.39 Deleted  1 1.6.30		, , , , , , , , , , , , , , , , , , , ,					
scales of temperature    Scales of temperature   Scale		and non-metals					
Heat & Temperature — Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat — Conduction, convection and radiation  4 Co- efficient of linear expansion and related problems with assignments  80-81 1.6.29 Deleted  5 Problem of heat loss and heat gain with assignments  82-85 1.6.30 Deleted  6 Thermal conductivity and insulators  7 Concept of pressure — Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  VII Basic Electricity  1 Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  2 Conductor, insulator, types of connections - series and parallel  1 1.6.28  1.6.29 Deleted  1.6.30 Deleted  Deleted  Poleted  1.6.31 Deleted  1.6.32 Deleted  1.6.32 Deleted  1.6.32 Deleted  1.6.33 Deleted  1.6.34 Deleted  1.6.35 Deleted  1.6.36 Deleted  1.6.37 Deleted  1.6.38 Deleted  1.6.38 Deleted  1.6.30 Deleted  1.6.30 Deleted  1.6.31 Deleted  1.6.32 Deleted  1.6.32 Deleted  1.6.32 Deleted  1.6.32 Deleted  1.6.32 Deleted  1.6.32 Deleted  1.6.33 Deleted  1.6.34 Deleted  1.6.35 Deleted  1.6.36 Deleted  1.6.37 Deleted  1.6.38 Deleted  1.6.38 Deleted  1.6.30 Deleted  1.6.30 Deleted  1.6.31 Deleted  1.6.32 Dele	2	·	76-77	1.6.27	Retained		
thermometer, pyrometer and transmission of heat—Conduction, convection and radiation  4 Co-efficient of linear expansion and related problems with assignments  5 Problem of heat loss and heat gain with assignments  6 Thermal conductivity and insulators  7 Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  VII Basic Electricity  Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  2 Conductor, insulator, types of connections - series and parallel  1 1.6.28  1.6.29 Deleted  1.6.30 Deleted  1.6.31 Deleted  1.6.32 Deleted  4  1.7.33 Partially deleted  1.7.33 Partially deleted		scales of temperature					
convection and radiation  4 Co-efficient of linear expansion and related problems with assignments  5 Problem of heat loss and heat gain with assignments  6 Thermal conductivity and insulators  7 Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  VII Basic Electricity  1 Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  2 Conductor, insulator, types of connections - series and parallel  102-107 1.7.34 Retained	3		78-79		Deleted		
4 Co-efficient of linear expansion and related problems with assignments 5 Problem of heat loss and heat gain with assignments 8 2-85 1.6.30 Deleted 6 Thermal conductivity and insulators 8 6-87 1.6.31 Deleted 7 Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  VII Basic Electricity 1 Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units 2 Conductor, insulator, types of connections - series and parallel 1 102-107 1.7.34 Retained				1.6.28			
5 Problem of heat loss and heat gain with assignments 6 Thermal conductivity and insulators 7 Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  VII Basic Electricity 1 Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units 2 Conductor, insulator, types of connections - series and parallel 1 102-107 1.7.34 Retained		<del>convection and radiation</del>					
6 Thermal conductivity and insulators 7 Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  VII Basic Electricity 1 Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units 2 Conductor, insulator, types of connections - series and parallel 1 102-107 1.7.34 Retained	4	Co-efficient of linear expansion and related problems with assignments	80-81	1.6.29	Deleted		
7 Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure  VII Basic Electricity  Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  Partially deleted  Conductor, insulator, types of connections - series and parallel  102-107 1.7.34 Retained	5	Problem of heat loss and heat gain with assignments	82-85	1.6.30	Deleted		
pressure, gauge pressure and gauges used for measuring pressure  VII Basic Electricity  Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  2 Conductor, insulator, types of connections - series and parallel  102-107 1.7.34 Retained	6	Thermal conductivity and insulators	86-87	1.6.31	Deleted		
VII       Basic Electricity       4         1       Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units       98       1.7.33       Partially deleted         2       Conductor, insulator, types of connections - series and parallel       102-107       1.7.34       Retained	7		88-97	1.6.32	Deleted		
1 Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units  2 Conductor, insulator, types of connections - series and parallel  102-107 1.7.34 Retained		pressure, gauge pressure and gauges used for measuring pressure					
produced, electric current AC,DC their comparison, voltage, resistance and their units  Conductor, insulator, types of connections - series and parallel  102-107  1.7.34 Retained	VII	Basic Electricity				4	
their units  2 Conductor, insulator, types of connections - series and parallel 102-107 1.7.34 Retained	1	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	98	1.7.33			
2 Conductor, insulator, types of connections - series and parallel 102-107 1.7.34 Retained					deleted		
		their units					
3 Ohm's law, relation between V.I.R & related problems 108 1.7.35 Retained	2	Conductor, insulator, types of connections - series and parallel	102-107	1.7.34	Retained		
	3	Ohm's law, relation between V.I.R & related problems	108	1.7.35	Retained		

4	Electrical power, energy and their units, calculation with assignments	112-114	1.7.36	Retained		
5	Magnetic induction, self and mutual inductance and EMF generation	115-117	1.7.37	Deleted		
46	Electrical power, HP, energy and units of electrical energy	118-120	1.7.38	Retained		
VIII	Mensuration				6	
1	Area and perimeter of square, rectangle and parallelogram	121-124	1.8.39	Retained		
2	Area and perimeter of Triangles	125-129	1.8.40	Retained		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	130-137	1.8.41	Retained		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	138-144	1.8.42	Retained		
5	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	145-147	1.8.43	Deleted		
IX	Levers and Simple machines				0	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mechanical advantage	148-149	1.9.44	Deleted		
2	Lever & Simple machines - Lever and its types	150-153	1.9.45	Retained		
X	Trigonometry				0	
1	Measurement of angles	154-155	1.10.46	Retained		
2	Trigonometrical ratios	156-161	1.10.47	Retained		
3	Trigonometrical tables	162-172	1.10.48	Retained		
4	Application in calculating height and distance (Simple applications)	173-177	1.10.49	Deleted		
			TOTAL REVISED HOURS		30	

# REVISED SYLLABUS FOR WORKSHOP CALCULATION & SCIENCE - ENGINEERING TRADES NAME OF TRADE : WIREMAN (2nd Year)

Sr. No.	Title of the Exercise	NIMI books' Page No.	NIMI books' Exercise No.	To be Retained / Not retained	Revised Hours	Remarks/ Justification
ı	Friction				2	
1	Friction - Advantages and disadvantages, Laws of friction, coefficient of friction, angle of friction, simple problems related to friction	17	2.1.01	Deleted		
2	Friction - Lubrication	811	2.1.02	Retained		
3	Friction - Co- efficient of friction, application and effects of friction in workshop practice	1213	2.1.03	Deleted		
II	Centre of Gravity				0	
1	Centre of gravity - Centre of gravity and its practical application	1423	2.2.04	Deleted		
Ш	Area of cut out regular surfaces and area of irregular surfaces				0	
1	Area of cut out regular surfaces - circle, segment and sector of circle	2426	2.3.05	Deleted		
2	Related problems of area of cut out regular surfaces - circle, segment and sector of circle	2728	2.3.06	Deleted		
3	Area of irregular surfaces and application related to shop problems	2931	2.3.07	Deleted		
IV	Algebra				10	
1	Algebra - Addition , subtraction, multiplication & division	3235	2.4.08	Retained		
2	Algebra - Theory of indices, algebraic formula, related problems	3640	2.4.09	Retained		

V	Elasticity				2	
1	Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus	41-52	2.5.10	Retained		
2	Elasticity - Ultimate stress and working stress	53-55	2.5.11	Deleted		
VI	Heat Treatment				0	
1	Heat treatment and advantages	56-57	2.6.12	Deleted		
2	Heat treatment - Different heat treatment process - Hardening, tempering, annealing, normalising and case hardening	5866	2.6.13	Deleted		
VII	Profit and Loss				4	
1	Profit and loss - Simple problems on profit & loss	6772	2.7.14	Retained		
2	Profit and loss - Simple and compound interest	7384	2.7.15	Retained		
VIII	Estimation and Costing				10	
1	Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade	85-91	2.8.16	Retained		
2	Estimation and costing - Problems on estimation and costing	92	2.8.17	Retained		
			TOTAL REVISED HOURS		28	