As Per DGET Revised Syllabus -Annexure-B

Craftsman Training Scheme

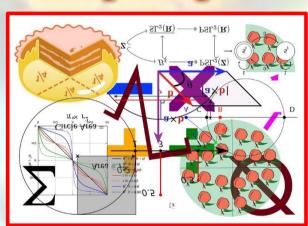
Industrial Training Institute,

Workshop Calculation and Science

Splitup Syllabus

For First Year

All Engineering Trade



Name of the ITI:-Industrial Training Institute,

Name of the Instructor :-

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Sr. No.	Title of the Exercise					Turner (NSQF Level - 5)		Machinist (NSQF Level - 5)			Machinist Grinder (NSQF Level - 5)			Mechanic Motor Vehicle (NSQF Level - 5)			Operator Advanced Machine Tool (NSQF Level - 5)	
			Proposed Date	Date Taken		Proposed Date	Date Taken	Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken
1	Unit, Fractions -Classification of unit system	✓			1			*		1			✓			✓		
2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	✓			✓			✓		✓			✓			√		
3	Measurement units and conversion	*			✓			✓		✓			√			√		
4	Factors, HCF, LCM and problems	1			1			✓		1			✓			√		
5	Fractions - Addition, subtraction, multiplication & division	✓			✓			✓		✓			✓			√		
6	Decimal fractions - Addition, subtraction, multiplication & division	✓			√			✓		✓			✓			✓		
7	Solving problems by using calculator	✓			1			✓		√			√			√		
II	Square root, Ratio and Proportions, Percentage	√			✓			✓		✓			✓			✓		
1	Square and square root	√			*			✓		*			✓			✓		
	Simple problems using calculator	4			✓			✓		✓			√			√		
3	Applications of Pythagoras theorem and related problems	✓			✓			✓		✓			✓			√		
4	Ratio and proportion	√			*			*		*			✓			✓		
5	Ratio and proportion - Direct and indirect proportions	✓			✓			×		1			√			✓		

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Sr. No.	Title of the Exercise		Fitter (NSQF Level - 5)		Turner (NSQF Level - 5)			Machinist (NSQF Level - 5)			Machinist Grinder (NSQF Level - 5)			Mechanic Motor Vehicle (NSQF Level - 5)		Operator Advanced Machine Tool (NSQF Level - 5)		
			Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken	Proposed Date	Date Taken
6	Percentage	✓			✓			✓			✓			✓		✓		
7	Percentage - Changing percentage to decimal and fraction	✓			✓			✓			✓			✓		✓		
III	Material Science																	
1	Types metals, types of ferrous and non ferrous metals	×			✓			✓			✓			✓		~		
2	Physical and mechanical properties of metals	×			1			1			1			1		✓		
3	Introduction of iron and cast iron	×			✓			✓			✓			✓		✓		
4	Difference between iron & steel, alloy steel and carbon steel	×			✓			✓			✓			✓		✓		
5	Properties and uses of rubber, timber and insulating materials	×			×			1			1			1		✓		
IV	Mass, Weight, Volume and Density																	
1	Mass, volume, density, weight and specific gravity.	✓			✓			✓			✓			✓		~		
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 velo city, acceleration and retardation	×			×			×			×			✓		×		

Sr. No.	Title of the Exercise		Fitter (NSQF Level - 5)			Turner (NSQF Level - 5)			Machinist (NSQF Level - 5)		Machinist Grinder (NSQF Level - 5)			Mechanic Motor Vehicle (NSQF Level - 5)			Operator Advanced Machine Tool (NSQF Level - 5)	
2	Speed and velocity - Related problems on speed & velocity	×	Proposed Date	Date Taken	×	Proposed Date	Date Taken	×	Proposed Date	×	Proposed Date	Date Taken	✓	Proposed Date	Date Taken	×	Proposed Date	Date Taken
3	Work, power, energy, HP, IHP, BHP and efficiency	✓			*			✓		*			✓			✓		
4	Potential energy, kinetic energy and related problems with assign ment	×			×			√		✓			✓			✓		

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Sr. No.	Title of the Exercise		Fitter (NSQF Level - 5)			Turner (NSQF Level - 5)		Machinist (NSQF Level - 5)			Machinist Grinder (NSQF Level - 5)			Mechanic Motor Vehicle (NSQF Level - 5)			Operator Advanced Machine Tool (NSQF Level -	
			Proposed Date	Date Taken		Proposed Date	Date Taken	Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken
VI	Heat & Temperature and Pressure																	
	Concept of heat and temperature, effects of heat, difference bet ween 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, pyr ometer and transmission of heat - Conduction, convection and radiation	X			×			×		×			×			×		
	coefficient of linear expansion and related problems with assign ments	×			×			×		×			×			×		
5	Problem of heat loss and heat gain with assignments	×			×			×		×			×			×		
6	Thermal conductivity and insulators	×			×			×		×			×			×		
	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gaug e 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	×			×			×		×			✓			×		

			(17	Idi K5 III	uiac	tes / Topi	c ictaiiic	ed and X Ind	icutes 10	Pic	Defeteu							
Sr N4	Title of the Exercise		Fitter (NSQF Level - 5)			Turner (NSQF Level - 5)		Machinist (NSQF Level - 5)			Machinist Grinder (NSQF Level - 5)			Mechanic Motor Vehicle (NSQF Level - 5)			Operator Advanced Machine Tool (NSQF Level - 5)	
			Proposed Date	Date Taken		Proposed Date	Date Taken	Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken
-	Electrical power, energy and their units, calculation with assignments	×			×			×		×			×			×		
	Magnetic induction, self and mutual inductance and EMF generation	×			×			×		×			✓			×		
(Electrical power, HP, energy and units of electrical energy	×			×			×		×			×			×		
V	II Mensuration																	
:	Area and perimeter of square, rectangle and parallelogram	✓			✓			7		✓			✓			✓		
:	Area and perimeter of Triangles	✓			√			7		✓			✓			√		
;	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	✓			1			/		1			✓			✓		
-	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	✓			1			/		1			✓			√		
!	Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	√			×			×		×			×			✓		

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Sr. No.	Title of the Exercise		Fitter (NSQF Level - 5)			Turner (NSQF Level - 5)		Machinist (NSQF Level - 5)			Machinist Grinder (NSQF Level - 5)			Mechanic Motor Vehicle (NSQF Level - 5)			Operator Advanced Machine Tool (NSQF Level - 5)	
			Proposed Date	Date Taken		Proposed Date	Date Taken	Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken
IX	Levers and Simple machines																	
1	Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency o f machine, relationship between efficiency, velocity ratio and mec hanical advantage	×			×			×		×			×			×		
2	Lever & Simple machines - Lever and its types	✓			✓			~		✓			✓			√		
х	Trigonometry																	
1	Measurement of angles	✓			✓			✓		✓			×			✓		
2	Trigonometrical ratios	✓			√			✓		√			×			√		
3	Trigonometrical tables	✓			√			✓		√			×			√		
4	Application in calculating height and distance (Simple applications)	×			×			×		×			×			×		

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Sr. No. Title of the Exercise		Mechanic Machine Tool Maintenance (NSQF Level 5)			Tool & Die Maker (Press Tools, Jigs & Fixtures) (NSOF Level - S)			Refrigeration and Air Conditioning Technician (NSQ Level -5)			Draughtsman (Givil) (NSQF Level - 5)			Draughtsman Mechanical (NSQF Level - S)			Electrician (NSQF Level - 5)			Electronics Mechanic (NSQF Level - 5)			Information and Communication Technology System Maintenance (NSQF Level - 5)	
		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken
Unit, Fractions-Classification of unit system	*			√			1			1			√			√			√			√		
2 Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	1			1			1			~			*			7			*			*		
3 Measurement units and conversion	*			✓			√			~			~			~			✓			✓		
4 Factors, HCF, LCM and problems	*			✓			✓			1			1			✓			✓			✓		
5 Fractions - Addition, subtraction, multiplication & division	*			√			1			~			✓			✓			√			√		
6 Decimal fractions - Addition, subtraction, multiplication & division	1 🗸			1			1			~			√			~			*			*		
7 Solving problems by using calculator	*			1			✓			~			✓			√			*			*		
II Square root, Ratio and Proportions, Percentage	*			1			1			~			√			~			✓			√		
1 Square and square root	✓			√			*			~			✓			✓			✓			✓		
2 Simple problems using calculator	*			√			✓			~			✓			✓			√			✓		
3 Applications of Pythagoras theorem and related problems	V			1			1			~			✓			√			✓			*		
4 Ratio and proportion	V			1			√			1			✓			✓			✓			✓		
5 Ratio and proportion - Direct and indirect proportions	√			*			√			~			✓			✓			✓			✓		
6 Percentage	✓			✓			√			~			✓			✓			✓			✓		
7 Percentage - Changing percentage to decimal and fraction	√			1			✓			1			✓			✓			✓			✓		
III Material Science																								
1 Types metals, types of ferrous and non ferrous metals	√			*			√			~			✓			✓			✓			×		

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Sr. No.	Title of the Exercise		Mechanic Machine Tool Maintenance (NSQF Level - 5)			Tool & Die Maker (Press Tools, Jigs & Fixtures) (NSGF Level - S)			Refrigeration and Air Conditioning Technician (NSQF Level - 5)			Draughtsman (Gvil) (NSQF Level - 5)			Draughtsman Mechanical (NSQF Level - 5)			Electrician (NSQF Level - 5)			Electronics Mechanic (NSQF Level - 5)			Information and Communication Technology System Maintenance (NSGF Level - 5)	
			Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken
2	Physical and mechanical properties of metals	✓			1			*			~			1			×			×			×		
3	Introduction of iron and cast iron	✓			*			*			~			*			*			1			×		
4	Difference between iron & steel, alloy steel and carbon steel	1			1			*			~			1			×			×			×		
5	Properties and uses of rubber, timber and insulating materials	1			1			*			~			*			×			×			×		
IV	Mass, Weight, Volume and Density																								
1	Mass, volume, density, weight and specific gravity.	1			*			~			~			*			*			×			×		
2	Related problems for mass, volume, density, weight and specific gravity	×			×			*			~			√			1			×			√		
V	Speed and Velocity, Work, Power and Energy																								
	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	1			✓			~			×			×			√			×			×		
4	Potential energy, kinetic energy and related problems with assign ment	×			×			×			×			×			×			×			×		

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Sr. No. Title of the Exercise		echanic Machine Tool Maintenance (NSQF Level - S)			Tool & Die Maker (Press Tools, Jigs & Fixtures) (NSGF Level - S)			Refrigeration and Air Conditioning Technician (NSQ Level - 5)			Draughtsman (Gvil) (NSQF Level - 5)			Draughtsman Mechanicai (NSQF Level - 5)			Electrician (NSQF Level - S)			Electronics Mechanic (NSQF Level - 5)			Information and Communication Technology System Maintenance (NSQF Level - 5)	
		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken
VI Heat & Temperature and Pressure	+			-				1		+	+ +												$\overline{}$	
Concept of heat and temperature, effects of heat, difference between heat and temperature, boiling point & melting point of different metals and non-metals				√			✓			1			✓			✓			*			×		
Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	×			×			✓			×			√			1			✓			×		
Heat &Temperature - Temperature measuring instruments, types of thermometer, pyrometer and transmission of heat - Conduction, convection and radiation	×			×			✓			~			✓			✓			×			×		
4 coefficient of linear expansion and related problems with assignments	×			×			√			1			×			×			×			×		
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, gaug e 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			✓			√			×			×			*			*			*		
	×			×			×			×			×			*			*			*		
3 Ohm's law, relation between V.I.R & related problems	×			×			×			×			×			*			*			*		
4 Electrical power, energy and their units, calculation with assignments				×			×			×			×			*			*			*		
5 Magnetic induction, self and mutual inductance and EMF generation				×			×			×			×			*			*			*		
6 Electrical power, HP, energy and units of electrical energy	*			×			×			×			×			√			*			*		
VIII Mensuration																								
Area and perimeter of square, rectangle and parallelogram	*			√			>			*			✓			√			×			×		

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Sr. No	Title of the Exercise		Mechanic Machine Tool Maintenance (NSQF Level -			Tool & Die Maker (Press Tools, Jigs & Fixtures) (NSQF Level - S)			Refrigeration and Air Conditioning Technician (NSQF Level - 5)			Draughtsman (Gvil) (NSQF Level - 5)			Draughtsman Mechanical (NSQF Level - 5)			Electrician (NSQF Level - 5)			Electronics Mechanic (NSQF Level - 5)			Information and Communication Technology System Maintenance (NSQF Level - 5)	
			Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken
2	Area and perimeter of Triangles	√			✓			~			1			√			✓			×			×		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	1			1			×			1			✓			✓			×			×		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	V			1			×			1			1			~			×			×		
5	Finding the lateral surface area, total surface area and capacity in I itres of hexagonal, conical and cylindrical shaped vessels	1			✓			×			1			✓			×			×			×		

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Sr. No.	Title of the Exercise		Proposed Date Date Taker			Tool & Die Maker (Press Tools, Jigs & Fixtures) (NSQF Level - S)			Refrigeration and Air Conditioning Technician (NSQF Level - 5)			Draughtsman (Gvil) (NSQF Level - 5)			Draughtsman Mechanical (NSQF Level - 5)			Electrician (NSQF Level -5)			Electronics Mechanic (NSQF Level - 5)			Information and Communication Technology System Maintenance (NSQF Level - 5)	
			Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken
IX	Levers and Simple machines		Troposcu Pute	- Jule Tullett		Troposcu zute			oposeu zute			. горозец эцц			oposeu zute			Troposed Sate			. roposcu zute			торозеш дите	
	cevers and simple machines																								
1		×			×			×			×			×			×			×			×		
	Effort and load, mechanical advantage, velocity ratio, efficiency of machine, relationship between efficiency, velocity ratio and mec																								
	hanical advantage																								
2	Lever & Simple machines - Lever and its types	1			1			×			×			×			1			×			×		
	ecter a simple maximes ecter and its types																								
Х	Trigonometry											+													
1	Measurement of angles	1			1			×			1			√			✓			✓			✓		
2	Trigonometrical ratios	V			1			×			✓			~			✓			1			✓		
3	Trigonometrical tables	✓			1			×			1			✓			✓			1			✓		
4	Application in calculating height and distance (Simple applications)	×			×			×			×			×			✓			×			×		
	· · · · · · · · · · · · · · · · · · ·	_	· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·		_	·		_					· · · · · · · · · · · · · · · · · · ·	_	·	· ·	_	·		_	· · · · · · · · · · · · · · · · · · ·	_

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Sr. No. Title of the Exercise		Instrument Mechanic (NSQF Level - 5)			Wireman (NSQF Level - 4)			Painter (General) (NSQF Level - 5)			Carpenter (NSQF Level - 4)			Foundryman (NSQF Level - 4)			Mason (Building Constructor) (NSQF Level - 3)			Mechanic Diesel (NSQF Level - 4)			Plastic Processing Operator (NSQF Level - 4)	
	1		1					1 1						1 1									1	
Unit, Fractions-Classification of unit system	*	Proposed Date	Date Taken	*	Proposed Date	Date Taken	✓	Proposed Date	Date Taken	Prop	posed Date	Date Taken	✓	Proposed Date	Date Taken	✓	Proposed Date	Date Taken	*	Proposed Date	Date Taken	✓	Proposed Date	Date Taken
2 Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	*			*			✓			✓			✓			✓			*			✓		
3 Measurement units and conversion	*			✓			*			√			✓			✓			√			✓		
4 Factors, HCF, LCM and problems	*			*			✓			*			✓			*			V			V		
5 Fractions - Addition, subtraction, multiplication & division	V			*			V			*			√			*			√			√		
6 Decimal fractions - Addition, subtraction, multiplication & division				*			*			*			√			•			√			*		
7 Solving problems by using calculator	V			*			√			*			√			*			√			*		
II Square root, Ratio and Proportions, Percentage	V			*			V			<u> </u>			√			4			V			Y		
1 Square and square root	V			Y			V			*			▼			√			V			*		
Simple problems using calculator Applications of Pythagoras theorem and related problems	V			V			v			<u> </u>			v ✓			,			V			<u> </u>		
Applications of Pythagoras theorem and related problems Ratio and proportion	·			· ·			·			·			· ✓			·			<i>'</i>			·		
5 Ratio and proportion - Direct and indirect proportions	· ·			· ✓			√			✓			· ✓			√			·			<i>✓</i>		
6 Percentage	✓			✓			1			✓			✓			✓			√			✓		
7 Percentage - Changing percentage to decimal and fraction	✓			✓			✓			✓			✓			√			✓			✓		
III Material Science																								
Types metals, types of ferrous and non ferrous metals	*			✓			×			✓			✓			√			✓			✓		
Physical and mechanical properties of metals	✓			×			×			✓			✓			√			✓			✓		
3 Introduction of iron and cast iron	×			✓			×			x			✓			√			√			✓		

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Sr. No. Title of the Exercise		Instrument Mechanic (NSQF Level - 5)			Wireman (NSQF Level - 4)			Painter (General) (NSQF Level - 5)			Carpenter (NSQF Level - 4)			Foundryman (NSQF Level - 4)			Mason (Building Constructor) (NSQF Level - 3)			Mechanic Diesel (NSQF Level - 4)			Plastic Processing Operator (NSQF Level - 4)	
		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken
4 Difference between iron & steel, alloy steel and carbon steel	×	1		×	.,		×	.,		×	.,		/			·	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1	.,		_		
4 Difference between Iron & Steel, alloy Steel and carbon Steel	_			_			^			^			ľ						ľ			ľ		
5 Properties and uses of rubber, timber and insulating materials	×			×			×			✓			✓			✓			1			✓		
																								I
IV Mass, Weight, Volume and Density																								
																								Į.
Mass, volume, density, weight and specific gravity.	~			×			×			✓			*			1			~			*		
Related problems for mass, volume, density, weight and specific gravity	V			×			×			✓			1			1			1			✓		
V Speed and Velocity, Work, Power and Energy																								
Speed and velocity - Rest, motion, speed, velocity, difference between speed and velocity, acceleration and retardation	1			×			×			×			×			×			1			×		
2 Speed and velocity - Related problems on speed & velocity	✓			×			×			×			×			×			1			×		
																								,
3 Work, power, energy, HP, IHP, BHP and efficiency	*			×			×			X			×			×			~			×		
Potential energy, kinetic energy and related problems with assign ment	×			×			×			×			×			×			×			×		

						(17161115	-	iuctes 1	opie men		a una /\	naicates 1	opic Defete	<i>u</i>)	_								
Sr. No.	Title of the Exercise		Instrument Mechanic (NSQF Level - 5)		Wireman (NSQF Level - 4)			Painter (General) (NSQF Level - 5)			Carpenter (NSQF Level - 4)		Foundryman (NSQF Level - 4)			Mason (Building Constructor) (NSQF Level - 3)			Mechanic Diesel (NSQF Level - 4)			Plastic Processing Operator (NSQF Level - 4)	
			Proposed Date	Date Taken	Proposed Date	e Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken	Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken
VI	Heat & Temperature and Pressure																						
	Concept of heat and temperature, effects of heat, difference bet ween heat and temperature, boiling point & melting point of different metals and non-metals				✓		×			×		✓			1			1			*		
	Scales of temperature, Celsius, Fahrenheit, kelvin and conversion between scales of temperature	✓			✓		×			×		~			~			×			×		
	Heat &Temperature - Temperature measuring instruments, types of thermometer, pyr ometer and transmission of heat - Conduction, convection and radiation	*			×		×			×		✓			×			×			×		
	coefficient of linear expansion and related problems with assignments	×			×		×			×		1			~			×			×		
5	Problem of heat loss and heat gain with assignments	×			×		×			×		~			×			×			✓		
6	Thermal conductivity and insulators	×			×		×			×		1			×			×			*		
	Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gaug e pressure and gauges used for measuring pressure	✓			×		×			×		~			×			✓			✓		
VII	Basic Electricity																						
	Introduction and uses of electricity, molecule, atom, how electricit y is produced, electric current AC,DC their comparison, voltage, re sistance and their units				✓		×			×		·			×			✓			✓		
2	Conductor, insulator, types of connections - series and parallel	√			1		×			×		1			×			√			~		
3	Ohm's law, relation between V.I.R & related problems	✓			✓		×			×		×			×			✓			×		
	Electrical power, energy and their units, calculation with assignme nts				✓		×			×		×			×			×			×		
	Magnetic induction, self and mutual inductance and EMF generati on	✓			×		×			×		×			×			×			×		
6	Electrical power, HP, energy and units of electrical energy	✓			✓		×			×		×			×			×			×		
VIII	Mensuration																						
		×			7		1			*		×			1			✓			√		
2	Area and perimeter of Triangles	×			7		1			1		×			1			×			✓		
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	×			✓		1			1		×			~			×			√		

													_			_								
Sr. No. Title of the Exercise		Instrument Mechanic (NSQF Level - 5)			Wireman (NSQF Level - 4)			Painter (General) (NSQF Level - 5)			Carpenter (NSQF Level - 4)			Foundryman (NSQF Level - 4)			Mason (Building Constructor) (NSQF Level - 3)			Mechanic Diesel (NSQF Level - 4)			Plastic Processing Operator (NSQF Level - 4)	
		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken
4 Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	×			*			1			~			×			1			1			~		
5 Finding the lateral surface area, total surface area and capacity in litres of hexagonal, conical and cylindrical shaped vessels	×			×			*			×			×			*			V			×		

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Sr. No. Title of the Exercise		Instrument Mechanic (NSQF Level - 5)			Wireman (NSQF Level - 4)			Painter (General) (NSQF Level - 5)			Carpenter (NSQF Level - 4)			Foundryman (NSQF Level - 4)			Mason (Building Constructor) (NSQF Level - 3)			Mechanic Diesel (NSQF Level - 4)			Plastic Processing Operator (NSQF Level - 4)	
		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken
IX Levers and Simple machines																								
Simple machines - Effort and load, mechanical advantage, velocity ratio, efficiency o f machine, relationship between efficiency, velocity ratio and mec				×			×			×			×			×			1			×		
2 Lever & Simple machines - Lever and its types	×			×			×			×			×			×			1			×		
X Trigonometry																								
1 Measurement of angles	✓			×			1			✓			×			×			✓			✓		
2 Trigonometrical ratios	✓			×			1			✓			×			×			✓			√		
3 Trigonometrical tables	×			×			×			×			×			×			1			×		
4 Application in calculating height and distance (Simple applications)	×			×			×			×			×			×			×			×		

Sr N	·. o.	Title of the Exercise		Plumber (NSQF Level - 4)			Pump Operator cum Mechanic (NSQF Level - 4)			Sheet Metal Worker (NSQF Level - 3)			Welder (NSQF Level - 4)	
				Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken
	1	Unit, Fractions-Classification of unit system	✓			√			√			√		
	2	Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units	✓			✓			✓			✓		
	3	Measurement units and conversion	✓			✓			✓			✓		
,	4	Factors, HCF, LCM and problems	✓			✓			✓			✓		
	5	Fractions - Addition, subtraction, multiplication & division	✓			√			√			√		
	6	Decimal fractions - Addition, subtraction, multiplication & division	✓			√			✓			✓		
	7	Solving problems by using calculator	✓			√			✓			✓		
	II :	Square root, Ratio and Proportions, Percentage	✓			√			✓			√		
	1	Square and square root	✓			✓			✓			✓		

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Sr. No.	Title of the Exercise		Plumber (NSQF Level - 4)			Pump Operator cum Mechanic (NSQF Level - 4)			Sheet Metal Worker (NSQF Level - 3)			Welder (NSQF Level - 4)	
			Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken
_		 	Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken	 	Proposed Date	Date Taken
2	Simple problems using calculator	\			✓			~			✓		
3	Applications of Pythagoras theorem and related problems	✓			√			✓			✓		
4	Ratio and proportion	√			✓			✓			✓		
5	Ratio and proportion - Direct and indirect proportions	√			√			√			√		
6	Percentage	*			√			✓			√		
7	Percentage - Changing percentage to decimal and fraction	1			√			✓			*		
III	Material Science												
1	Types metals, types of ferrous and non ferrous metals	✓			✓			✓			✓		
2	Physical and mechanical properties of metals	✓			✓			✓			✓		

Sr. No.	Title of the Exercise		Plumber (NSQF Level - 4)			Pump Operator cum Mechanic (NSQF Level - 4)			Sheet Metal Worker (NSQF Level - 3)			Welder (NSQF Level - 4)	
			Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken	<u> </u>	Proposed Date	Date Taken
	Introduction of iron and cast iron	*			×			✓			*		
4	Difference between iron & steel, alloy steel and carbon steel	×			×			✓			✓		
5	Properties and uses of rubber, timber and insulating materials	×			×			✓			✓		
IV	Mass, Weight, Volume and Density												
1	Mass, volume, density, weight and specific gravity.	√			✓			✓			✓		
2	Related problems for mass, volume, density, weight and specific gravity	✓			✓			✓			✓		
	Speed and Velocity, Work, Power and Energy												
1	Speed and velocity - Rest, motion, speed, velocity, difference between speed and veloc ity, acceleration and retardation				✓			×			×		
2	Speed and velocity - Related problems on speed & velocity	×			✓			×			×		

Sr. No.	Title of the Exercise		Plumber (NSQF Level - 4)			Pump Operator cum Mechanic (NSQF Level - 4)			Sheet Metal Worker (NSQF Level - 3)			Welder (NSQF Level - 4)	
			Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken
3	Work, power, energy, HP, IHP, BHP and efficiency	×			✓			×			×		
4	Potential energy, kinetic energy and related problems with assign ment	×			×			×			×		

Sr No	·. 0.	Title of the Exercise		Plumber (NSQF Level - 4)			Pump Operator cum Mechanic (NSQF Level - 4)			Sheet Metal Worker (NSQF Level - 3)			Welder (NSQF Level - 4)	
ļ.	,	Heat 9 Townsonstand and December		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken
\		Heat & Temperature and Pressure												
		Concept of heat and temperature, effects of heat, difference betw een heat and temperature, boiling point & melting point of different metals and non-metals				√			√			✓		
		Scales of temperature, Celsius, Fahrenheit, kelvin and conversion be etween scales of temperature	√			×			×			×		
;		Heat &Temperature - Temperature measuring instruments, types of thermometer, pyro meter and transmission of heat - Conduction, convection and radiation	×			×			✓			✓		
,	4	coefficient of linear expansion and related problems with assignme nts	×			×			✓			✓		
!	5	Problem of heat loss and heat gain with assignments	×			×			×			×		
	6	Thermal conductivity and insulators	×			×			×			×		
		Concept of pressure - Units of pressure, atmospheric pressure, absolute pressure, gauge pressure and gauges used for measuring pressure	×			×			*			✓		
V	/11	Basic Electricity												

Sr N	·. o.	Title of the Exercise		Plumber (NSQF Level - 4)			Pump Operator cum Mechanic (NSQF Level - 4)			Sheet Metal Worker (NSQF Level - 3)			Welder (NSQF Level - 4)	
L				Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken
		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	X			×			×			×		
	- 1.	Electrical power, energy and their units, calculation with assignmen ts	X			×			×			×		
	5	Magnetic induction, self and mutual inductance and EMF generation	X			×			×			×		
	6	Electrical power, HP, energy and units of electrical energy	×			×			×			×		
V	111	Mensuration												
	1	Area and perimeter of square, rectangle and parallelogram	✓			✓			✓			√		
	2	Area and perimeter of Triangles	✓			×			✓			✓		

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Sr. No	Title of the Exercise		Plumber (NSQF Level - 4)			Pump Operator cum Mechanic (NSQF Level - 4)			Sheet Metal Worker (NSQF Level - 3)			Welder (NSQF Level - 4)	
			Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken
3	Area and perimeter of circle, semi-circle, circular ring, sector of circle, hexagon and ellipse	1			×			✓			✓		
4	Surface area and volume of solids - cube, cuboid, cylinder, sphere and hollow cylinder	√			✓			✓			✓		
5	Finding the lateral surface area, total surface area and capacity in li tres of hexagonal, conical and cylindrical shaped vessels	✓			✓			√			√		

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Sr. Nd	Title of the Exercise		Plumber (NSQF Level - 4)			Pump Operator cum Mechanic (NSQF Level - 4)			Sheet Metal Worker (NSQF Level - 3)			Welder (NSQF Level - 4)	
			Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken		Proposed Date	Date Taken
D	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				×			×			×		
2	Lever & Simple machines - Lever and its types	×			×			×			×		
>	Trigonometry												
1	Measurement of angles	✓			✓			✓			✓		
2	Trigonometrical ratios	✓			✓		22222	✓			✓		
		×			✓			✓			✓		
4	Application in calculating height and distance (Simple applications)	×			×			×			×		