

GOVERNMENT OF INDIA MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP DIRECTORATE GENERAL OF TRAINING

COMPETENCY BASED CURRICULUM

ELECTRICIAN

(Duration: Two Years) Revised in July 2022 CRAFTSMEN TRAINING SCHEME (CTS) NSQF LEVEL- 4



SECTOR – POWER



ELECTRICIAN

(Engineering Trade)

(Revised in July 2022)

Version: 2.0

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL-4

Developed By

Ministry of Skill Development and Entrepreneurship Directorate General of Training **CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE** EN-81, Sector-V, Salt Lake City, Kolkata – 700 091

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		 operation (i) delta-delta, (ii) delta-star, (iii) star-star, (iv) star-delta by use of three single phase transformers. (6 Hrs.) 104. Perform testing of transformer oil. (6 Hrs.) single phase transformers for three phase operation. Types of Cooling, protective devices, bushings and termination etc. Testing of transformer oil. Materials used for winding and winding wires in small 				
		105. Practice on winding of transformer.				
		small transformer. (8 Hrs.) (06 Hrs.)				
		106. Practice of general				
		maintenance of				
		transformer. (5 Hrs.)				
ENGINEERING DRAWING: 40 Hrs.						
Professional	Read and apply	ENGINEERING DRAWING				
Knowledge	engineering drawing	Introduction to Engineering Drawing and Drawing				
ED- 40 Hrs.	application in the	Instruments –				
	field of work	Conventions				
		 Sizes and layout of drawing sheets 				
		Ittle Block, its position and content				
		 Drawing Instrument 				
		Free nand drawing of –				
		 Geometrical figures and blocks with dimension Transferring measurement from the given object to the free hand sketches 				
		 Free hand drawing of hand tools 				
		Drawing of Geometrical figures:				
		• Angle, Triangle, Circle, Rectangle, Square, Parallelogram.				
		 Lettering & Numbering – Single Stroke 				
		Dimensioning Practice				
		• Types of arrowhead				
		Symbolic representation				
		 Different electrical symbols used in the related trades 				
		Reading of Electrical Circuit Diagram				
		Reading of Electrical Layout drawing				
	WORKSH	IOP CALCULATION & SCIENCE: 30 Hrs				
Protessional	Demonstrate basic	WORKSHOP CALCULATION & SCIENCE				
Knowledge	mathematical	Unit, Fractions				
WCS- 30 Hrs.	concept and	Classification of unit system				
	principles to	Measurement units and conversion				
	operations	Factors, HCF, I CM and problems				
	operations.					



Understand and	Fractions - Addition, substraction, multiplication & division		
explain basic science	Decimal fractions - Addition, subtraction, multilipication &		
in the field of study.	division		
	Solving problems by using calculator		
	Square root, Ratio and Proportions, Percentage		
	Square and suare root		
	Simple problems using calculator		
	Applications of pythagoras theorem and related problems		
	Ratio and proportion		
	Ratio and proportion - Direct and indirect proportions		
	Percentage		
	Precentage - Changing percentage to decimal and fraction		
	Material Science		
	Types metals, types of ferrous and non ferrous metals		
	Introduction of iron and cast iron		
	Mass, Weight, Volume and Density		
	Mass, Volume, density, weight		
	Work, power, energy, U.P. JUP, PUP, and efficiency.		
	Retential energy, HP, HP, BHP and efficiency		
	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.		
	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		
	Trigonometry		
	Measurement of angles		
	I rigonometrical ratios		
	Ingonometrical tables		

Project work / Industrial visit

Broad Areas:

- a) Overload protection of electrical equipment
- b) Automatic control of streetlight/night lamp



- c) Fuse and power failure indicator using relays
- d) Door alarm/indicator
- e) Decorative light with electrical flasher

SYLLABUS FOR ELECTRICIAN TRADE					
SECOND YEAR					
Duration	Reference Learning Outcome	Professional Skills (Trade Practical) With Indicative Hours	Professional Knowledge (Trade Theory)		
Professional Skill 35 Hrs.; Professional Knowledge 09 Hrs.	Plan, execute commissioning and evaluate performance of DC machines. (Mapped NOS: PSS/N4402)	 107. Identify terminals, parts and connections of different types of DC machines. (05 Hrs.) 108. Measure field and armature resistance of DC machines. (05 Hrs.) 109. Determine build up voltage of DC shunt generator with varying field excitation and performance analysis on load. (10 Hrs.) 110. Test for continuity and insulation resistance of DC machine. (5 Hrs.) 111. Start, run and reverse direction of rotation of DC series, shunt and 	General concept of rotating electrical machines. Principle of DC generator. Use of Armature, Field Coil, Polarity, Yoke, Cooling Fan, Commutator, slip ring and Brushes, Laminated core etc. E.M.F. equation Separately excited and self- excited generators. Series, shunt and compound generators. (09 Hrs.)		