

MAHARASHTRA STATE BOARD OF VOCATIONAL EDUCATION EXAMINATION, MUMBAI

1	Name of Syllabus	C. C. IN REPAIR OF ELECTRICAL POWER TOOLS (302122)																																								
2	Max. Nos of Student	25 Students																																								
3	Duration	6 Month																																								
4	Type	Part Time																																								
5	Nos Of Days / Week	6 days																																								
6	Nos Of Hours /Days	4 hrs.																																								
7	Space Required	1) Workshop = 400 sqfeet 2) Class Room = 200 sqfeet TOTAL = 600 sqfeet																																								
8	Entry Qualification	8 th Passed																																								
9	Objective Of Syllabus/ introduction	The participant will be able to List the materials used for motor winding Method of stripping the old winding and preparing the winding former and coils Prepare the winding former and the coils . Wind the coils for starting and running winding. Method of inserting coil in the slots.																																								
10	Employment Opportunity	Self Employment / May get job in Establishment																																								
11	Teacher’s Qualification	Diploma in electrical , I.T.I. N.C.V.T. (electrical)																																								
12	Training System	<div>Training System Per Week</div> <table><tr><td>Theory</td><td>Practical</td><td>Total</td></tr><tr><td>6 hrs</td><td>18 hrs</td><td>24 hrs</td></tr></table>							Theory	Practical	Total	6 hrs	18 hrs	24 hrs																												
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13	Exam. System	<table><tr><td>Sr. No.</td><td>Paper Code</td><td>Name of Subject</td><td>TH/PR</td><td>Hours</td><td>Max. Marks</td><td>Mini. Marks</td></tr><tr><td>1</td><td>30212211</td><td>REPAIR OF ELECTRICAL POWER TOOLS</td><td>TH-I</td><td>3 Hrs</td><td>100</td><td>35</td></tr><tr><td>2</td><td>30212221</td><td>BASIC ELECTRICAL</td><td>PR-I</td><td>3 Hrs</td><td>100</td><td>50</td></tr><tr><td>3</td><td>30212222</td><td>REPAIR OF ELECTRICAL POWER TOOLS</td><td>PR-II</td><td>6 Hrs</td><td>200</td><td>100</td></tr><tr><td></td><td></td><td>TOTAL</td><td></td><td></td><td>400</td><td>185</td></tr></table>	Sr. No.	Paper Code	Name of Subject	TH/PR	Hours	Max. Marks	Mini. Marks	1	30212211	REPAIR OF ELECTRICAL POWER TOOLS	TH-I	3 Hrs	100	35	2	30212221	BASIC ELECTRICAL	PR-I	3 Hrs	100	50	3	30212222	REPAIR OF ELECTRICAL POWER TOOLS	PR-II	6 Hrs	200	100			TOTAL			400	185					
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THEORY - I - REPAIR OF ELECTRICAL POWER TOOLS

1. Safety practice-Lifting & handling tools,Heavy equipments
2. Safety practice-Fire extinguishers,Types of Fire extinguishers
3. General safety of tools & equipments
4. Introduction of Electricity
5. Electrical safety
6. Electricals tools & Equipments
7. Electrical testing instruments like megger,multimeter,series test board ,test lamp etc
8. Define simple electrical terms like voltage,current,resistance & their units
9. Conductors & types of conductors
10. Insulators & types of insulators
11. Crimping & crimping tools
12. Soldering
13. Electrical circuit
14. Resistance
15. Work,power,energy
16. DC & testing the polarity
17. AC & identifying phase,neutral & earth terminals (1 Φ & 3 Φ)
18. Electromagnetism
19. Polyphase circuit
20. Classification of single phase motors – parts, construction and working of single phase motors
21. Classification of electrical power tools as per their application like hand drilling machine, angle grinder, rotary hammer, sander/polisher, blower, heavy duty cutter, portable cut off saw etc.,
22. Trouble shooting technique in electrical power tools – like insulation testing armature defects, field winding, stator winding defects, noisy operation bearing problem, carbon brush changing, turning the commutator surface.
23. Symptoms and causes of motor troubles – preventive and breakdown maintenance.
24. Construction a lead acid battery
25. How to keep lead acid battery health.
26. Recharging of battery,
27. Check the condition of battery, reading of hydrometer, preparation of electrolyte and chemical effect. Battery chargers and its application precautions to be taken while operation.

PRACTICAL - I - BASIC ELECTRICAL

1. Safety practices – lifting and handling.
2. Safety practices – Fire fighting
3. Nature of working of tools and equipments.
4. Electrical safety rules & precautions.
5. Study of Electrical tools & equipments ,Electrical testing instruments.
6. Skinning different types of cable ends.
7. Make various joints in cables
8. Crimping cable ends.
9. Soldering joints &the cable lugs
10. Simple electrical connection using resistance,voltmeter,& ammeter
11. Making different types of testing boards
12. Testing the polarity of dc supply
13. Identification of phase , neutral (in 1 Φ & 3 Φ motor)& polyphase connection(3 Φ motor)

PRACTICAL - II - REPAIR OF ELECTRICAL POWER TOOLS

1. Safety precaution (For Power tools)
2. Dismantling and reassembling of single phase motors like permanent capacitor, capacitor start induction run, capacitor start capacitor run, Universal motors.
3. Dismantling and reassembling of electrical power tools used like hand drilling machine, angle grinder, rotary hammer, marble cutter , heavy duty mini grinder, sander/polisher, blower , heavy duty cutter, portable cut off saw etc.,
4. Trouble shooting in hand tools testing of insulation, armature defects, capacitor testing, carbon brush replacing after bedding – testing the protective devices.
5. Preventive maintenance of hand tools, overhauling, changing defective parts etc.,
6. Preparation of electrolyte
7. Preparation of cells and arrangements of cells
8. Assembling of battery
9. Charging / recharging of battery
10. Care and preventive maintenance of battery

List of Tools & Equipment

1. Screw Driver 8", 10", 12"
2. Cutting Pliers 6", 8"
3. Neon Tester
4. Heavy Duty Screw Driver 10", 12"
5. Nose Pliers 6", 8"
6. DE Spanner Set 8 Nos.
7. Pipe Wrench 22mm
8. 13mm two speed driller
9. 100mm Heavy duty mini Grinder
10. 150mm Straight Grinder
11. Dual speed flexible grinder
12. 180mm Sander/Polisher
13. Blower
14. Heavy duty Cutter
15. Portable cut-off saw
