

**MAHARASHTRA STATE BOARD OF VOCATIONAL EDUCATION EXAMINATION, MUMBAI**

1	Name of Syllabus	C. C. IN REWINDING OF AC & DC MOTOR (302121)												
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	Workshop = 400 sqfeet Class Room = 200 sqfeet TOTAL = 600 sqfeet												
8	Entry Qualification	8 <sup>th</sup> 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	Training System Per Week <table><tr><td>Theory</td><td>Practical</td><td>Total</td></tr><tr><td>6 hrs</td><td>18hrs</td><td>24hrs</td></tr></table>							Theory	Practical	Total	6 hrs	18hrs	24hrs
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6 hrs	18hrs	24hrs												
13	Exam. System	Sr. No.	Paper Code	Name of Subject	TH/PR	Hours	Max. Marks	Mini. Marks						
		1	30212111	REWINDING OF AC & DC MOTOR	TH-I	3 Hrs	100	35						
		2	30212121	Basic Electrical	PR-I	3 Hrs	100	50						
		3	30212122	REWINDING OF AC & DC MOTOR	PR-II	6 Hrs	200	100						
				TOTAL			400	185						

## **Syllabus :- REWINDING OF AC & DC MOTOR**

### **THEORY - I - REWINDING OF AC & DC MOTOR**

1. Introduction of Electricity, Electrical safety
2. Electricals tools & Equipments
3. Electrical testing instruments like megger, multimeter, series test board, test lamp etc
4. Define simple electrical terms like voltage, current, resistance & their units
5. Conductors & types of conductors
6. Insulators & types of insulators
7. Crimping & crimping tools, Soldering
8. Electrical circuit, Resistance
9. Work, power, energy
10. DC & testing the polarity
11. AC & identifying phase, neutral & earth terminals (1 $\Phi$  & 3 $\Phi$ )
12. Electromagnetism
13. Polyphase circuit
14. Safety precaution (For winding )
15. Knowledge about 1 $\Phi$  & 3 $\Phi$  motor
16. Introduction of rewinding insulating material used
17. AC 3 $\Phi$  motor – Introduction, Principle & study of different parts of 3 $\Phi$  motor, types of motors
18. Terminology used in 3 $\Phi$  motor winding like pole pitch, coil pitch etc .
19. Method of stripping the old winding and preparing the winding former and the coils.
20. Preparation of winding data for given Motor.
21. Procedure followed for re-winding of all kind of electric motors like single phase A./C. motors, pump motors, ceiling fan motors, table fan motors, washing machine motor, I.M. 3 $\Phi$  etc.
22. Various methods used of inserting coil into the slots. Preparation of winding table, connection diagram, winding diagram for given Motor.
23. Test to be done after re-winding-impregnation methods of winding
24. DC motor – Introduction, Principle & study of different parts of 3 $\Phi$  motor, types of motors
25. Terminology used for DC motor winding like pole pitch, coil pitch etc .
26. Methods of dismantling the burnt winding wire.
27. Preparation of winding data for given armature.
28. Preparation of winding table, connection diagram, winding diagram for given armature.
29. Procedure followed for re-winding armature of DC motor, various methods for inserting coils into slots.
30. Impregnation method of armature after rewinding & testing.

### **PRACTICAL - I - BASIC ELECTRICAL**

1. Electrical safety rules & precautions.
2. Study of Electrical tools & equipments, Electrical testing instruments.
3. Skinning different types of cable ends.
4. Make various joints in cables
5. Crimping cable ends.
6. Soldering joints & the cable lugs
7. Simple electrical connection using resistance, voltmeter, & ammeter
8. Making different types of testing boards
9. Testing the polarity of dc supply
10. Identification of phase, neutral (in 1 $\Phi$  & 3 $\Phi$  motor) & polyphase connection (3 $\Phi$  motor)

## **PRACTICAL - II - REWINDING OF AC & DC MOTOR**

1. Safety precaution (For winding )
2. List the conducting and insulating materials used in motor winding
3. Testing the motor before declaring for rewinding
4. Dismantle 1 $\Phi$  & 3 $\Phi$  motor, study the parts of motor & terminology.
5. Methods of stripping the old winding and preparing the winding former and the coils.
6. Method of inserting coil in the slots.
7. Making end connections
8. Testing the motor after rewinding
9. Impregnation methods of winding
10. Dismantle DC motor study the parts of motor & terminology.
11. Record the winding data for DC motor.
12. Method of dismantling the burnt winding wire .
13. Prepare the armature for rewinding
14. Wind the coils by hand insulate them Connection of armature leads on raiser.
15. Understand end connection, electrical and distinguishing start and finish of each
16. Varnish the armature winding

### **List of Tools & Equipment**

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|---------------------------------------|---------|
| 1. Screw Driver 8" 10", 12"           | 10 each |
| 2. Cutting Plier 6", 8"               | 10 each |
| 3. Neon Tester                        | 10 Nos. |
| 4. Heavy Duty Screw Driver 10", 12"   | 10 each |
| 5. Nose Plier 6"                      | 10 Nos. |
| 6. Standard Wire Gauge                | 10 Nos. |
| 7. Motorized coil winding machine     | 01 No.  |
| 8. Hand operated coil winding machine | 04 Nos. |

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