

1	Name of Syllabus	C. C. IN ELECTRICAL PUMP AND MOTOR REPAIRING (302103)																																								
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 = 200 Sq feet <u>Class Room = 200 Sq feet</u> TOTAL = 400 Sq feet																																								
8	Entry Qualification	VIII th Passed																																								
9	Objective Of Syllabus/ introduction	1) Trainee should be able to Repair Pumps & Electric Motors. 2) Trainee should know the Electrical & Mechanical maintenance & Care of the Pumps & Motor.3)Installation of motors																																								
10	Employment Opportunity	<ul style="list-style-type: none"><li>After completion of the course student will able to Set up his own elect. Pumps &amp; Motors repairing workshop.</li><li>He takes a contract of maintenance &amp; repairing work of Pumps &amp; Motors or do the Job at various pumping stations as a Operator.</li></ul>																																								
11	Teacher's Qualification	1) Diploma in Mechanical / Electrical. 2) I.T.I., N.C.T.V.T. in Electrician Wireman with 2 Years experience. 3) H.S.C. Vocational in Repairs & Maintenance of Electric motors with 2 Years experience.																																								
12	Training System	<table><tr><th colspan="7">Training System Per Week</th></tr><tr><td>Theory</td><td>Practical</td><td colspan="5">Total</td></tr><tr><td>6 Hours</td><td>18 Hours</td><td colspan="5">24 Hours</td></tr></table>						Training System Per Week							Theory	Practical	Total					6 Hours	18 Hours	24 Hours																		
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13	Exam. System	<table><tr><th>Sr. No.</th><th>Paper Code</th><th>Name of Subject</th><th>TH/PR</th><th>Hours</th><th>Max. Marks</th><th>Min. Marks</th></tr><tr><td>1</td><td>30210311</td><td>PUMPS &amp; ELECTRIC MOTOR REPAIR</td><td>TH-I</td><td>3 hrs</td><td>100</td><td>35</td></tr><tr><td>2</td><td>30210321</td><td>PUMPS &amp; ELECTRIC MOTOR REPAIR</td><td>PR-I</td><td>6 hrs</td><td>200</td><td>100</td></tr><tr><td>3</td><td>30210322</td><td>BASIC PRACTICE</td><td>PR-II</td><td>3 hrs</td><td>100</td><td>50</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	Min. Marks	1	30210311	PUMPS & ELECTRIC MOTOR REPAIR	TH-I	3 hrs	100	35	2	30210321	PUMPS & ELECTRIC MOTOR REPAIR	PR-I	6 hrs	200	100	3	30210322	BASIC PRACTICE	PR-II	3 hrs	100	50			Total			400	185
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## **SYLLABUS**

### **THEORY – I, PUMPS AND ELECTRIC MOTOR REPAIR**

1. Scope, safety precaution, first aid, shock treatment.
2. Basic electricity, terms, definitions, units, effects of electric current.
3. Specification, care & maintenance, identification of common tools, nut bolts & screws.
4. Conductor, insulator, & their properties. Classification of insulation & voltage.
5. Soldering & flux - Purpose, types, uses, precautions.
6. Common electrical accessories – Types, specification.
7. Electric circuits – Series, Parallel. R-L-C.
8. Cell – Types of cells, Primary & Secondary, Battery charging.
9. AC circuits – Single phase – poly phase & its terms.
10. Ear thing – Types, purpose, use, necessity.
11. AC motor – Single phase - 3 phase & their starters.
12. Plumbing accessories.
13. Pipe jointing material & foot valve.
14. Pump – Types, purpose & use.
15. Pump Installation.
16. General faults & remedies. ( Electrical & Mechanical )

## **Practical I, PUMPS AND ELECTRIC MOTOR REPAIR**

1. Safety precaution , first aid & shock treatment.
2. Use of different hand tools.
3. Conductor joints.
4. Crimping practice.
5. Soldering practice.
6. Connection of different electrical accessories.
7. Connection of different electric meters.
8. Wiring practice.
9. Repairing & testing of domestic pump.
10. Cutting, threading & fixing conduit accessories.
11. Measuring electrical quantities.

## **Practical II, BASIC PRACTICE**

1. Single phase motor starting , running , measurement of speed & reversing.
2. Three phase motor starting , running, measurement of speed & reversing.
3. Making coil, forms, insulating slots , inserting coils & connection.
4. Testing & varnishing of winding.
5. Overhauling AC motors.
6. Study of different types of pumps.
7. Overhauling of different types of pumps.
8. Replacement of impellor, oil seal. Gland, bearing.
9. Different pipe jointing.
10. Pump installation.
11. Preparation of foundation.
12. Installation of sub-miscible pumps.
13. Fault & remedies.
14. Selection of proper pump for particular purpose.

## 15. LIST OF TOOLS AND EQUIPMENTS

Trainee's Kit		
Sr. No.		qty
1.	2.	4.
1.	Rule wooden 4 fold 600 m.m.	2
2.	Scriber 15 m.m. x 4 m.m. (knurled centre portion).	4
3.	Pincer 150 m.m.	2
4.	Plier insulated 150 m.m.	4
5.	Screw driver 150 m.m.	4
6.	Punch centre 150 m.m. x 9 m.m.	2
7.	Knife double bladed electrician.	2
8.	Hammer, cross pen, 115 grams with handle.	4
9.	Electrician connector, screw driver, 400 m.m. insulated handle thin stem.	4
10.	Electrician Testing pencil (neon tester)	4
11.	Heavy duty screw driver 200 m.m.	4
12.	Electrician screw driver 250 m.m. thin stem insulated handle.	4
13.	Rule steel 300 m.m.	4
14.	Saw tenon 250 m.m.	2
15.	Hammer ball pen 0.75 kg. with handle.	2
16.	Firmer chisel wood 12 m.m.	2
19.	Plier side cutting 150 m.m.	2

### General Tools

1.	G. Clamps 200 m.m. 150 m.m. 100 m.m.	2
2.	Spanner 150 m.m. adjustable 15 degree as clyburns	2
3.	Blow lamp 5 liter	2
4.	Melting pot	2
5.	Ladder	2
6.	Chisel cold flat 12 m.m. x 200 m.m.	2
7.	Chisel wood firmer 25 m.m. and 6 m.m.	4
8.	Drill machine hand to 6 m.m. capacity	2
9.	Electric drill machine portable 6 m.m. capacity	1
10.	Pillar electric machine 12 m.m. capacity	1
11.	Allen Key	1 set
12.	Oil can 0.12 liter	2
13.	Grease gun	1
14.	Outside micrometer 0 to 25 m.m.	1
15.	Bench grinder motorized	1
16.	Rawl plug tool and kit	2 sets
17.	Pulley puller	1
18.	Bearing puller	1
19.	Tong tester (Clip on meter)	1
20.	Water Rheostat for loading	1
21.	Volt motor center zero 100-0-100 M volt	1
22.	Spring balances to 15 kg. and 0 to 2.5 kg.	1 set
23.	Stop watch	1

24.	Techno meter or valuation counter with stop watch	1
25.	Straight edge 300 m.m.	2
26.	Tape measuring 8 meter	2
27.	Scissor blade 150 m.m.	2
28.	Test lamp	4
29.	Screw driver 100 m.m.	4
30.	Chisel cold flat 12 m.m.	4
31.	Mallet hardware 0.50 kg	4
32.	Hacksaw frame 200 m.m. 300 m.m. adjustable.	4
33.	Square try 150 m.m. blade	4
34.	Divider 150 m.m. outside and inside caliper	2 each
35.	Plier flat nose 100 m.m.	4
36.	Plier round nose 100 m.m.	4
37.	Plier gas 150 m.m.	4
38.	Tweezers 100 m.m.	4
39.	Snip straight 150 m.m.	2
40.	Snip bent 150 m.m.	2
41.	Drill set to 100 m.m.	4
42.	Drill s.s. twist 3 m.m. 5 m.m. 6 m.m. set of 3	3
43.	Gauge, wire Imperial	2
44.	File flate 200 m.m. 2 <sup>nd</sup> cut	2
45.	File half round 200 m.m. smooth	2
46.	File half round 200 m.m. 2 <sup>nd</sup> cut	2
47.	File round 266 m.m 2 <sup>nd</sup> cut	2
48.	File round 100 m.m 2 <sup>nd</sup> cut	2
49.	File flat 150 m.m. rough	2
50.	File flat 150 m.m. smooth	2
51.	File flat 250 m.m. rough	2
52.	File flat 250 m.m. bastard	2
53.	Handle file	2
54.	Iron, soldering 255 grams, 125 watt.	2
55.	Vice hand 50 m.m. jaw.	4
56.	Stock and die set	2
57.	A.C. Voltmeter M.I.O. – 500 V	1
58.	A.C. Ammeter M.I.O. – 25 A	1
59.	A.C. Ammeter M.I.O. – 5 A	1
60.	A.C. Energy meter single phase 5                      230 V	2
61.	Magger 500 Volts	1
62.	Batch impregnating	1
63.	Growlers external and internal set	1
64.	Oven stowing	2
65.	Scale with weights 1 to 450 grams	1
66.	Stand, winger armature	4
67.	Vice table jaw 100 m.m.	2
68.	Locker with 8 drawers (Standard size)	1
69.	Bench working 2.5 x 1.20 x 0.75	4
70.	Almirah 2.5 x 1.20 x 0.50 meters.	2

71.	Instructor's table	1
72.	Instructor's chair	1
73.	Fire extinguishers	1
74.	Fire buckets	2
75.	Metal rack 6' x 5' x 18"	1
76.	Wire stripper 8"	1
77.	Copper bit soldering iron ½ lb.	4
78.	B.A. Taps and dies 0-2-4-6-8 sizes.	1 set
79.	Spring balance 0-2 lb.	1
80.	Pipevice to take pipes up to 2" dia.	2
81.	Cut out, reverse current overload, no voltage relays	1 each
82.	Students lockers.	1 unit
83.	Pipe Wrench 3"	2
84.	Chain Wrench 4"	2
85.	Adjustable spanner 1"	2

#### GENERAL MACHINERY

1.	Motor A.C. squirrel cage 3 phase 400 Volts 50 cycles. 2 to 3 H.P. with star-delta starter and triple pole iron-clad switch fuse.	1**
2.	Motor A.C. phase wound slip ring type 5 H.P. 400 Volts 3 phase, 50 cycles with starter and switch.	1**
3.	Motor A.C. single phase 230 Volts 1 H.P. repulsion type, complete with starter switch.	1**
4	Starters for 3 phase, 440 V, 50 cycles, 2 to 5 H.P A.C. Motors :-	1 set.
	i) Auto Transformer type starter	1
	ii) Star Delta Starter (Manual)	1
	iii) Direct on line starter	1
5.	Shaded pole motor, 220 V single phase, ¼ H.P. 50 cycles, 1200	
6.	Motor A.C. series type 230 V, 50 cycles, ¼ H.P. with starter and switch	

#### **REFERENCE BOOKS**

1) SUBODH VIDYUTSHAstra	BY TRAMBAK
WAGHMARE	
2) ADHUNIK VIDYUTSHAstra	BY PRAKASH SHAHA
3) BASIC ELECTRICITY	BY M L ANWANI
4) SOPE VIDYUTSHAstra	BY SHAM PITKE
5) BASIC ELECTRICAL ENGINEERING	BY P S DHOGAL
6) Pump Repairing	BY PRAKASH SHAHA
7) Mechanical Technology	BY HAJRA CHOUDHARY

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