

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

1	Name of Syllabus	C.C.IN SERVICING OF ELECTRIC DOMESTIC APPLIANCES (302107)																																									
2	Max.Nos of Student	25 Students																																									
3	Duration	06 Months																																									
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) <u>Class Room = 200 sqfeet</u> TOTAL = 600 sqfeet																																									
8	Entry Qualification	VII th Pass																																									
9	Objective Of Syllabus/ introduction	A trainee shall know : 1) The shop discipline and lay - out . 2) Safety precautions , firefighting equipments first aid etc. 3) Hand tools used in Electrical work.4) Domestic appliances repairing5)Dismental & Reassemble of Domestic appliances.																																									
10	Employment Opportunity	1) carry out the repairs and maintenance of Domestic Electrical appliances.2) Wiring installation 3) Household / Industrial Electrical wiring work.																																									
11	Teacher’s Qualification	1)ITI,NCTVT Electrician PASS 2)MCVC MREDA PASS & ONE YEAR EXPEREANCE																																									
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 hrs</td><td>18 hrs</td><td colspan="5">24 hrs</td></tr></table>							Training System Per Week							Theory	Practical	Total					6 hrs	18 hrs	24 hrs																		
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13	Exam. ystem	<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>Mini. Marks</th></tr><tr><td>1</td><td>30210711</td><td>Electrical Appliances</td><td>TH-I</td><td>3 hrs.</td><td>100</td><td>35</td></tr><tr><td>2</td><td>30210721</td><td>Practical on motor</td><td>PR-I</td><td>3 hrs.</td><td>100</td><td>50</td></tr><tr><td>3</td><td>30210722</td><td>Domestic appliances</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	30210711	Electrical Appliances	TH-I	3 hrs.	100	35	2	30210721	Practical on motor	PR-I	3 hrs.	100	50	3	30210722	Domestic appliances	PR-II	6 hrs.	200	100			TOTAL			400	185
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THEORY I, ELECTRICAL APPLIANCES

SR NO	Chapter
1	Introduction to the trade and safety precautions Signs and symbols as per I.S.I. Hand Tools. Micrometer and Wire gauge Types of accessories (wiring) Types of wiring accessories.
2	Conductors, Insulators and Semiconductors. Soldering, electrical Terms and Definitions. Use of Series test lamp, series tester. MultiMeter and Megger and its test. Ohm's law series Parallel Circuit Laws of Resistance
3	Effect of electric current. Magnetism and Electrico magnetism Magnetism and Electro Magnetism Type of D.C. Motors and its uses. Permanent Magnet Motor Types A.C. Single phase Motors and its Use.
4	Winding Conducting material Winding Insulating material Winding special tools. Rewinding procedure Rewinding procedure Varnishing and tapping.
5	Winding diagram of shaded pole motor. Fault finding of shaded pole motor. Winding diagram of Universal motor. Fault finding of universal motor Test of universal motor Test on Universal motor
6	Winding diagram of permanent capacitor motor Motor for ceiling fan Winding diagram of table fan. Winding diagram of capacitor start motor. Motor for table fan. Fault finding of table fan.
7	Principle, working and circuit diagram shaded Pole motor Description of shaded pole motor. Principle working ,and circuit diagram of Universal motor. Description of Universal motor. Principle working and circuit diagram of permanent capacitor motor. Description of permanent capacitor motor.
8	Principle, working and circuit diagram of capacitor. Description of capacitor start motor. Principle working and circuit diagram of Electric Hand drill machine. Description of Electric hand drill machine. Principle working and circuit diagram of mixer grinder. Description of mixer grinder.

9	<p>Principle working and circuit diagram of blender</p> <p>Description of blender.</p> <p>Principle working and circuit diagram of atta chakki (Ghar ghanti)</p> <p>Description of water pump.</p> <p>Principle working and circuit diagram of water pump (Centrifugal type)</p> <p>Description of water pump.</p>
10.	<p>Principle working and circuit diagram of water pump (Self Priming)</p> <p>Description of water pump.</p> <p>Principle working and circuit diagram of ceiling fan</p> <p>Description of ceiling fan.</p> <p>Principle working and circuit diagram of table fan permanent capacitor type.</p> <p>Description of table fan.</p>
11	<p>Principle working and circuit diagram of table fan (shaded pole type)</p> <p>Description working and circuit diagram of pedestal fan.</p> <p>Principle working and circuit diagram of personal fan.</p> <p>Description of personal fan.</p>
12	<p>Principle working and circuit diagram of table fan (Shaded pole type)</p> <p>Description of table fan</p> <p>Principle working and circuit diagram of pedestal fan.</p> <p>Description of pedestal fan.</p> <p>Principle working and circuit diagram of vacuum cleaner (Dry Type)</p> <p>Description of vacuum cleaner.</p>
13	<p>Description working and circuit diagram of vacuum cleaner wet type.</p> <p>Description of vacuum cleaner.</p> <p>Principle working and circuit diagram of stabilizer. (Manual Type)</p> <p>Description of stabilizer .</p> <p>Principle Working and Circuit diagram of stabilizer (Electronic)</p> <p>Description of stabilizer electronic.</p>
14	<p>Principle working and Circuit diagram of Washing machine (Impeller type)</p> <p>Description of washing machine.</p> <p>Principle working and circuit diagram of washing machine (Agitator type)</p> <p>Description of washing machine.</p> <p>Principle working and circuit diagram of washing machine (Drum type)</p> <p>Description of washing machine.</p>
15	<p>Principle working and circuit diagram of Dish Washer.</p> <p>Description of Dish Washer.</p> <p>Principle working and circuit diagram of Room Cooler (Single Motor).</p> <p>Description of Room Cooler.</p> <p>Principle working and circuit diagram of Room Cooler (Double Motor)</p> <p>Description of Room Cooler.</p>
16	<p>Principle working and circuit diagram of Room Cooler (Blower Type)</p> <p>Description of Room Cooler .</p> <p>Principle working and circuit diagram of Electric Iron(Ordinary)</p> <p>Description of Electric Iron.</p> <p>Principle working and circuit diagram of Electric Iron Steam.</p> <p>Description of Electric Iron.</p>
17	<p>Principle working and circuit diagram of Electric Iron Automatic.</p> <p>Description of Electric Iron.</p> <p>Principle working and circuit diagram of Hair Dryer (Ordinary)</p> <p>Description of Hair Dryer.</p> <p>Principle working and circuit diagram of hair dryer with Thermostat.</p> <p>Description of Hair Dryer.</p>

18	<p>Principle working and circuit diagram of Room Heater Reflector type. Description of Room Heater. Principle working and circuit diagram of room Heater Blower type. Description of room Heater Principle working and circuit diagram of Immersion Heater. Description of immersion heater.</p>
19	<p>Principle working and circuit diagram of Emergency Lamp. Description of Emergency Lamp. Principle working and circuit diagram of Rechargeable Torch. Description of Rechargeable Torch. Principle working and circuit diagram of Emergency Tube. Description of Emergency Tube.</p>
20	<p>Principle working and circuit diagram of Geyser Pressure Type (Heating element) Description of Geyser. Principle working and circuit diagram of Geyser Plate Type. Description of Geyser. Principle working and circuit diagram of Geyser Non Pressure Type. Description of Geyser.</p>
21	<p>Principle working and circuit diagram of Cooking Range. Description of Cooking Range. Principle working and circuit diagram of Geyser Plate Type. Principle working and circuit diagram of Hot Plate (Closed type) Description of Hot Plate. Principle working and circuit diagram of Electric Stove. Description of Electric Stove.</p>
22	<p>Principle working and circuit diagram of Toaster Ordinary. Description of Toaster Principle working and circuit diagram of Toaster Automatic Description of Toaster. Principle working and circuit diagram of Electric oven. Description of Electric oven.</p>
23	<p>Description of electric Kettle. Description of Electric Kettle. Principle working and circuit diagram of Coffee Percolator. Description of Coffee Percolator. Description Ice-Cream Machine Description Gas Lighter.</p>
24	<p>Description of Table Light. Description of Table Lamp. Description of Eleminator. Description of Massage machine Description of Heating Glass. Description of Electric Bell, Buzzer, Two Tone Chime.</p>
25	<p>Description of Hair Remover. Description of Shaving Machine. Description of Night lamp. Description of Stimulator</p>

PRACTICAL I, PRACTICALS ON MOTORS

Sr NO	Chapter
1	<p>Safety Precautions.</p> <p>Chart of signs and symbols. Preparation.</p> <p>Hand Tools and its use.</p> <p>Study and reading of Micrometer. Measurement of With Micrometer and S.W.G. Identification of Electrical accessories.</p> <p>Types of wire and their use.</p>
2	<p>Spicing of wires, types of joints.</p> <p>Soldering of Joints.</p> <p>Measurement of resistances by VJ (method, MultiMate)</p> <p>Megger test, Tests on Electrical circuit.</p> <p>Verification of Ohm's Law.</p> <p>Resistance in series parallel and combined circuit.</p>
3	<p>Study the effect of electric current .</p> <p>To prepare the electric bell and buzzer</p> <p>To prepare the two tone chime.</p> <p>Identification of D.C.Motors.</p> <p>Use of D.C. Motors.</p> <p>Use of single phase A.C.Mors.</p>
4	<p>Find out the rewinding data of burnt motor</p> <p>Burnt coil removing , slot cleaning.</p> <p>Insulating of slots.</p> <p>Coil Preparation.</p> <p>Coil connection and connection diagram</p> <p>Varnishing and tapping the motor.</p>
5	<p>Rewinding of shaded pole motor</p> <p>Rewinding of shaded pole motor</p> <p>Rewinding of shaded pole motor</p> <p>Rewinding of universal motor.</p> <p>Rewinding of universal motor.</p> <p>Rewinding of universal motor.</p>
6	<p>Rewinding of permanent capacitor motor</p> <p>-----do-----</p> <p>-----do-----</p> <p>Rewinding of capacitor start motor.</p> <p>-----do-----</p> <p>-----do-----</p>

PRACTICAL II, DOMESTIC APPLIANCES

SR NO	CHAPTER.
1	<p>Disassembly, assembly and safety precautions of shaded pole motor</p> <p>Faulty finding repair and test of shaded pole motor.</p> <p>Disassembly, assembly and safety precautions of Universal motor.</p> <p>Fault finding, repair and test of Universal motor.</p> <p>Disassembly, assembly safety precautions for permanent capacitor motor.</p> <p>Fault finding, repair and Test of permanent capacitor motor</p>
2	<p>Disassembly, assembly and safety precaution capacitor start motor.</p> <p>Fault finding, repair and test of capacitor start motor.</p> <p>Electric hand drill machine.</p> <p>Fault finding repair and test of electric hand drill machine.</p> <p>Disassembly, assembly and safety precaution of mixer grinder.</p> <p>Fault finding repair and test of mixer grinder.</p>
3	<p>Disassembly, assembly and safety precaution blender.</p> <p>Fault finding repair and test of blender.</p> <p>Disassembly, assembly and safety precaution of Atta chakki.</p> <p>Disassembly, assembly and safety precaution of water pump.</p> <p>Fault finding repair and test of water pump.</p>
4	<p>Disassembly, assembly and safety precaution water pump (Self Priming)</p> <p>Fault finding repair and test of water pump.</p> <p>Disassembly, assembly and safely precaution of Universal motor.</p> <p>Fault finding, repair and test of Universal motor.</p> <p>Disassembly, assembly safety precautions for permanent capacitor motor.</p> <p>Fault finding repair and test of table fan.</p>
5	<p>Disassembly, assembly and safety precaution of shaded pole type table fan.</p> <p>Fault finding repair and test of table fan</p> <p>Disassembly and safety precaution of Pedestal fan.</p> <p>Fault finding repair and test of personal fan.</p>
6	<p>Disassembly, assembly and safety precaution of exhaust fan (Capacitor type)</p> <p>Fault finding repair and test of exhaust fan.</p> <p>Disassembly assembly and safety precaution of exhaust fan shaded pole type</p> <p>Fault finding repair and test of exhaust fan</p> <p>Disassembly, assembly and safety precautions of vacuum (Dry Type)</p> <p>Fault finding repair and test of vacuum cleaner.</p>
7	<p>Disassembly, assembly and safety precaution of vacuum cleaner wet type.</p> <p>Fault finding repair and test of vacuum cleaner.</p> <p>Disassembly assembly and safety precaution of stabilizer (Manual type)</p> <p>Fault finding repair and test of stabilizer.</p> <p>Disassembly assembly and safety precaution of stabilizer.</p> <p>Fault finding repair and test of stabilizer.</p>
8	<p>Disassembly assembly and safety precaution of washing machine (Impeller type)</p> <p>Fault finding repair and test of washing machine.</p> <p>Disassembly assembly and safety precaution of washing machine (Agitator type.)</p> <p>Fault finding repair and test Washing Machine</p> <p>Disassembly assembly and safety precautions washing machine (Drum type)</p> <p>Fault finding repair and test of washing machine.</p>

9	Disassembly assembly and safety precaution of Dish Washer. Fault finding repair and test of dish Washer Disassembly assembly and safety precaution of Room Cooler.. Fault finding repair and test of Room Cooler. (Double Motor) Fault finding repair and test of Rrroom Cooler.
10	Disassembly assembly and safety precaution of Room (Blower Type) Fault finding repair and test of Room Cooler. Disassembly and safety precaution of Electric Iron.(Ordinary) Fault finding repair and test of electric Iron. Disassembly assembly and safety precaution of electric Iron Steam. Fault finding repair and test of Electric Iron.
11	Disassembly assembly and safety precaution of Electric Iron Automatic. Fault finding repair and test of Electric Iron. Disassembly assembly and safety precaution of Hair Dryer (Ordinary) Fault finding repair and test of Hair Dryer. Disassembly assembly and safety precaution of Hair Dryer with Thermostat. Fault finding repair and test of Hair Dryer.
12	Disassembly assembly and safety precaution of Room Heater Reflector type. Fault finding repair and test of Room Heater. Disassembly assembly and safety precaution of Room Heater Blower type. Fault finding repair and test of Room Heater. Disassembly assembly and safety precaution of Immersion Heater.- Fault finding repair and test of Immersion Heater.
13	Disassembly assembly and safety precaution of Emergency Lamp Fault finding repair and test of emergency lamp. Disassembly assembly and safety precaution of Rechargeable Torch. Fault finding repair and test of Rechargeable Torch. Disassembly assembly and safety precaution of emergency Tube. Fault finding repair and test of Emergency Tube.
14	Disassembly assembly and safety precaution of Geyser Pressure Type (Heating element) Fault finding repair and test of Geyser. Disassembly assembly and safety precaution of Geyser Plate Type. Fault finding repair and test of Geyser Disassembly assembly and safety precaution of Geyser Non Pressure Type Fault finding repair and test of Geyser.
15	Disassembly assembly and safety precaution of Hot plate (closed type) Fault finding repair and test of Hot Plate. Disassembly assembly and safety precaution of Electric Stove Fault finding repair and test Electric stove.
16	precaution of Toaster Automatic. Fault finding repair and test of Toaster Disassembly assembly and safety precaution of Electric Oven. Fault finding repair and test of Electric Disassembly assembly and safety precaution of Toaster Ordinary. Fault finding repair and test of Toaster. Disassembly assembly and safety Oven.

17	Disassembly assembly and safety precaution of Electric Kettle. Fault finding repair and test of Electric Kettle Disassembly assembly and safety precaution of coffee Perculator. Fault finding repair and test of Coffee. Fault finding repair and test of Coffee Perculator. Fault finding repair and test of Ice-cream Machine Fault finding repair and test of Gas Lighter
18	Fault finding and repair of Tube light Fault finding and repair of table lamp Fault finding and repair of Eliminator. Fault finding and repair of Massage Machine. Fault finding and repair of Hair Remover Fault finding and repair of Electric Bell, Buzzer, Two Tone Chime.
19	Fault finding and repair of Hair Remover. Fault finding and repair of shaving Machine. Fault finding and repair of night lamp. Fault finding and repair of Stimulator. REVISION REVISION.

TOOLS

Sr.No.	Description of Tools/Equipment
1	Combination plier 200 mm Insulated
2	Long Nose Plier 150 mm Insulated
3	Side Cutting plier 150 mm Insulated
4	Flat Nose Plier 150mm Insulated
5	Screw Driver 250mm
6	Screw Driver 250mm
7	Screw Driver 100mm
8	Screw Driver 75mm
9	Noon Tester 500 volt.
10	Electrical knife single plate
11	Ball Pane Hammer 200 gm.
12	Ball Pane Hammer 100gm.
13	Wooden mallet 1 Kg
14	Multimeter (Ordinary)
15	Series Tester Battery Operated
16	Wire Stripper
1	Hack Saw plier 150mm
2	Round Nose Plier 150mm
3	Standard Wire Gauge
4	Micrometer Outside 0 to 25mm
5	Spanner set 3 to 12mm
6	Double Ended spanner Set 13 to 25mm
7	Double Ended Spanner Set 1/8" to 1/2 (Inch)
8	Double Ended spanner Set 5/16" to 1"(Inch)
9	Ring Spanner 3 to 12mm
10	Ring spanner 13 to 12 mm
11	Electrical hand Drill machine 2800 R.P.M.
12	Electric Hand Drill Machine 2800 R.P.M.
13	Ordinary hand Drill Machine Box Type 6mm
14	Pocker 150mm
15	Rawal Punch with Bite (8 No.)
16	Scissor 200mm
17	Steel Measuring Tape 3m
18	Allen Key Set 3mm to 12 mm
19	Hot Chisel Hexagonal 1/2" x 6 "
20	Armature Holder
21	Bearing Puller 100mm
22	Bearing puller 200mm
23	Center Punch 100mm
24	Laddle Steel
25	Soldering Pot
26	Soldering Iron 10 wt
27	Soldering Iron 25 wt.
28	Soldering Bit 125 wt
29	Copper Soldering Bit 100gm
30	Blow Lamp 1 l capacity (Brass)
31	Soldering Gun
32	Prick Punch 150mm smooth
33	File Flat 150mm Bastard

34	File Flat 150 mm
35	Round File 150mm
36	Half Round File 150 mm
37	Triangular file set
38	Square file 10mm
39	Niddle file set
40	Adjustable screw driver set with Tester
41	Tennon Saw 300 mm
42	Bench vice 100mm Jaw
43	Pipe vice 100 mm jaw
44	Electrical Grinder Double Ended 150mm
45	Piller type drill machine 12mm
46	Hand coil winding machine
47	Drill set 1mm to 12 mm
48	Press machine 50 kg lever type
49	Socket Spanner 3 to 25mm

EQUIPMENT

1	Voltmeter AC (MI type) 0 to 250 volt (100mm x (100mm Square type)
2	Voltmeter MC 0 to 250 Volt (DC) (100mm x 100mm square type)
3	Ammeter 0 x to 10 amp moving coil(100mm x 100 Square type)
4	Ammeter 0 to 10 amp Moving coil (100mm x 100mm Square type)
5	Megger 500 volt
6	Growler Inside and Outside
7	Techno meter
8	Universal Motor ¼ H.P.250 volt.
9	Shaded Pole Motor ¼ H.P. 250 Volt
10	Capacitor start ¼ H.P. 250 Volt
11	Mixer Grinder 600 Watt 250 Volt
12	Water Pump ¼ H.P. 250 Volt with Carbon Brush AC and DC.
13	Water Pump ¼ H.P. 250 Volt permanent Capacitor Motor.
14	Water Pump ¼ H.P.250V. with Centrifugal Switch
15	Ceiling Fan1200 mm
16	Table Fan 400mm Capacitor type.
17	Table Fan 400mm Shaded Pole Type
18	Pedestal Fan 600mm 25V. Heavy duty
19	Exhaust Fan 300 mm shaded Pole type
20	Exhaust Fan 300mm shaded pole type
21	Cabin Fan 400mm
22	Cabin Fan 225mm
23	Vacuum Cleaner Dry type
24	Vacuum Cleaner Wet type
25	Washing machine (Front Loaded)
26	Washing machine (Top Loaded)
27	Dish washer
28	Room Cooler 400mm exhaust Fan Type.
29	Room cooler with Fan and Separate Pump
30	Room cooler with double Blower.
31	Blender 250 Volt . 40 watt
32	Hair dryer thermostat type 60 watt
33	Electric Iron Automatic 750 watt
34	Electric Iron Steam 450 watt.
35	Electric Iron Steam 450 watt

36	Room Heater reflector type 1000 watt
37	Room Heater Blower type 1500 watt
38	Immersion Heater 1000 watt
39	Geyser non pressure type 1500 watt
40	Geyser pressure type 1500 watt
41	Hot Plate 1500 watt open type
42	Hot plate 1500 watt closed type
43	Cooking range 1000-3--- watt
44	Toaster Automatic 500 watt
45	Toaster non-automatic 500 watt
46	Electric Kettle 1500 watt
47	Coffee percolator
48	Electric Gas Lighter
49	Table Lamp
50	Fluorescent tube 40 watt (Complete Unit)
51	Emergency lamp 12 volt 250 mili amp
52	Emergency tube 20 watt
53	Rechargeable torch 6 volt.
54	Eliminator 230 Volt/1.5.3.405.6.9.12V
55	Hair remover
56	Shaving Machine
57	Massage Machine
58	Heating Pad
59	Stabilizer manually operated
60	Stabilizer electronic operated.

REFERANCE 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) Electrical Domestic Appliances | BY DIPAK TATPUJE |
