Syllabus for Diploma in Vocation (D.Voc), 1st Semester
Branch: Refrigeration and Air Conditioning/Electrical Wiring
Subject Name: Field Technician I
Subject Code: 1210007

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	T	PR	C	ESE (E)	PA/CA (M)	PA/CA (I)	ESE (V)	
0	0	15	15	00	00	100	100	200

L- Lectures; T- Tutorial; OJT- On Job Training is equivalent to Practical; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	Identify the trade tools; practice their uses with safety, care &maintenance. Identification of danger, warning, caution & safety signs. Preventive measures for electrical accidents and use of fire extinguishers. Connection of electrical accessories. measurement – crimping Wire joints - Types - Soldering methods. Skinning, twisting and crimping. Identify various types of cables and measure conductor size using SWG and micrometer. Make joints on single strand conductors. Crimping and soldering of joints / lugs.	50	30
2.	Measure parameters in combinational DC circuits by applying Ohm's Law for different resistor values and voltage sources. Measure current and voltage in DC circuits to verify Kirchhoff's Law. Verify laws of series and parallel circuits with voltage source in different combinations. Measure current and voltage and analyse the effects of shorts and opens in series and parallel circuits. Measure power, energy for lagging and leading power factors in single phase circuits. Determine the relationship between Line and Phase values for star and delta connections. Measure the Power of three phase circuit for balanced and unbalanced loads.	40	25
3.	Identification various conduits and different electrical accessories. Cutting, threading of different sizes & laying Installations. Prepare test boards / extension boards and mount accessories like lamp holders, various switches, sockets, fuses, relays, MCB, ELCB. Wire up PVC conduit wiring to control one lamp from two different places using two way switches. Control panel wiring using wiring accessories and mounting of control elements, e.g. meters, fuses, relays, switches, push buttons, MCB, ELCB etc. Prepare different types of earthing and measure earth resistance by earth tester / Megger.	35	15
4.	Use of various analog and digital measuring Instruments. Measuring instruments in single and three phase circuits e.g. multimeter, Wattmeter, Energy meter, Phase sequence meter and Frequency meter etc. Test single phase energy meter for its errors. Measure power consumption for different loads with various times of use and calculate watt-hour. Find out power ratings from product label and prepare a load calculation chart. Perform OC and SC test to determine and efficiency of single phase transformer. Draw circuit diagram of substation and indicate various components.	25	15
5.	Create a rough layout of the rooms showing existing Grid meter line, MCB, nearest shaded & dry place for a solar PCU and place for panels. Connect the array junction box to the above installation and draw wires up to PCU. Wire the above installation panels, battery etc. to a 1 KW Solar PCU Prepare a First inspection report on the solar plant installation. Prepare a list of Do's and Don'ts	30	15

	in the installation. Evaluate windiness of a place using an anemometer. Test with a blower and model windmill & record the observations. Assemble a solar panel using the cell string. Determine the I-V curve of finished solar PV panel and prepare a model certificate. Assemble, install and commission a solar water pump/street light/solar fertilizer spray.		
	Total	**180**	**100**

Suggested Specification Table with Marks (OJT):

Distribution of OJT Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
50	**45**	**30**	**45**	**30**	**0**

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References :

1. https://dgt.gov.in/sites/default/files/2024-02/RAC.pdf
2. https://www.cstaricalcutta.gov.in/