



**Syllabus for Diploma in Vocation (D.Voc), 1<sup>st</sup> Semester**  
**Branch: Refrigeration and Air Conditioning/Electrical Wiring**  
**Subject Name: Automation & Control Technician I**  
**Subject Code: 1210008**

**Teaching and Examination Scheme:**

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

**Course Content:**

Unit No.	Content	No. of Hours	% of Weightage
1.	Demonstrate the use of protective equipment suitable as per tasks and work conditions. Demonstrate the use of warning and safety signs. Demonstrate the use of different methods of accident prevention at workplace. Demonstrate the use of the correct procedure to report any abnormal situation/ behaviour of any equipment/system to relevant authorities. Demonstrate the use of first aid procedure and bandage to victims. Demonstrate the steps to free a person from electrocution, and artificial respiration and the CPR Process. Demonstrate how to use defined emergency procedures such as raising alarm, safe/efficient, evacuation, correct means of escape and so on. Prepare a sample incident report. Demonstrate the use of correct method to move injured people and others during an emergency. Demonstrate how to use fire extinguishers at the time of emergency. Demonstrate the correct techniques of lifting and handling heavy objects.	40	20
2.	Identify various components of different earthing system. Measure earth resistance by earth tester/ megger. Perform grounding of equipment and systems. Test earth leakage by ELCB and relay.	20	10
3.	Outline the organizational structure to provide work related feedback. Calculate the repair estimate for commonly found defaults in the boards. Demonstrate different methods to detect damage in parts of the electrical sub-system. Analyse the sample debugging wire diagram, PCB design and interpretation of technical drawings. Demonstrate preparing a sample report to document the inspection results.	35	20
4.	Identify types of wires, cables and their specifications. Measure size of the wire using SWG /micrometer. Make married and 'T' (Tee) joint in stranded conductors. Prepare a Britannia straight and 'T' (Tee) joint in bare conductors. Prepare western union joint in bare conductor. Prepare Rat tail/ Duplex cross/ Knotted type/ fixture Joints in bare conductor. Solder the finished copper conductor joints with precaution. Prepare termination of cable lugs by using crimping tool. Demonstrate joining of metals by brazing.	35	20
5.	Measure resistance using voltage drop/Wheatstone bridge method. Measure current and voltage in electrical circuits and verify Kirchhoff's Law.	30	20

	Verify the characteristics of series-parallel combination of resistors. Wind a solenoid, determine the poles and plot the field of a magnet bar. Demonstrate generation of mutually induced emf. Measure current, voltage, power factor and determine the characteristics of RL/ RC / RLC in AC series / parallel circuits. Measure power, energy for lagging / leading power factors in single phase / three phase circuits. Wireman Demonstrate improvement of PF b		
6	Make a block diagram of Thermal /Solar/ wind/ small, mini & micro hydro power plants/ Nuclear power plants. Make line diagram of transmission and distribution systems. Identify major equipment used in different substations viz., outdoor, indoor, pole mounted, etc. Prepare a line diagram of the institute/ ITI supply system.	20	10
<b>Total</b>		<b>180</b>	<b>100</b>

**Suggested Specification Table with Marks (OJT):**

<b>Distribution of OJT Marks</b>					
<b>R Level</b>	<b>U Level</b>	<b>A Level</b>	<b>N Level</b>	<b>E Level</b>	<b>C Level</b>
<b>50</b>	<b>45</b>	<b>30</b>	<b>45</b>	<b>30</b>	<b>0</b>

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/>

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