

### Scheme of Examination for VAC/VOC

Semester	Course Type	Course Code	Nomenclature of paper	Credits	Contact hours	Internal marks	End term Marks	Total Marks	Duration of exam (Hrs) T / P
4	VOC	B23-VOC-207	Maintenance of Electrical Appliances	2	2	15	35	50	3
			Practicum	2	4	15	35	50	3

**Kurukshetra University Kurukshetra**  
**Undergraduate Programs**  
**Course: CC-M4 (V)**

<b>Session: 2024-25</b>			
<b>Part A - Introduction</b>			
Subject	Physics		
Semester	4 <sup>th</sup>		
Name of the Course	<b>Maintenance of Electrical Appliances</b>		
Course Code	B23-VOC-207		
Course Type: (CC/MCC/MDC/CC-M/DSEC/ VOC/DSE/PC/AEC/VAC)	VOC		
Level of the course (Annexure-)	100-199		
Pre-requisite for the course (if any)	Student of the 4 <sup>th</sup> sem of any undergraduate scheme under NEP		
Course Learning Outcomes (CLO):	<p>After completing this course, the learner will be able to:</p> <ol style="list-style-type: none"> <li>1. To acquire necessary skills/hands on experience/working knowledge of multimeters, galvanometers, ammeters, voltmeters, wattmeter and CRO.</li> <li>2. To acquire necessary skills/hands on experience/working knowledge of DC circuit, single and three phase circuit connections, basics of electrical wiring along with electrical protection devices.</li> <li>3. To understand the basic difference of earthing and grounding in circuits and home appliances.</li> <li>4. To understand the working principles of transformers, motors and different household domestic appliances.</li> <li>5. To check and fault diagnosis of the electrical connections at household and also learn the skill to repair electrical appliances for the general troubleshoots and wiring faults.</li> </ol>		
Credits	Theory	Practical	Total
	2	2	4
Contact Hours	2	4	6
<b>Max. Marks: 100</b>		<b>Time: 3hrs</b>	
<b>Internal Assessment Marks: 30</b>			
<b>End Term Exam Marks: 70</b>			
<b>Part B- Contents of the Course</b>			

**Instructions for Paper- Setter**

1. Nine questions will be set in total.
2. Question no. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have 4 parts and the answer should be in brief but not in Yes/No.
3. Four more questions are to be attempted, selecting one question out of two questions set from each unit. Each question may contain two or more parts.
4. All questions will carry equal marks.
5. The question paper will be set in English and Hindi.

Unit	Topics	Contact Hours
I	<p><b>DC circuits:</b> Electrical conductors, dielectrics and insulators materials, resistance, DC voltage source, Ohm's law, electrical circuit connections: series, parallel, star and delta connections of electrical elements.</p> <p><b>AC circuits:</b> Inductance and capacitance, AC voltage sources, type of circuit reactance, circuit impedance, real power, reactive power, apparent power, power factor and its significance. Single-phase and three phase ac circuit connections.</p>	8
II	<p><b>Electrical machines:</b> Construction and working of transformers, AC and DC motors.</p> <p><b>Measuring instruments:</b> Elementary calculations for electrical circuit energy consumption, galvanometer, ammeters, voltmeters, wattmeter, multimeter, CRO, function generator.</p>	7
III	<p><b>Electrical wiring system:</b> Components of domestic wiring system and its connections diagrams, overloading and short circuiting of electrical circuits.</p> <p><b>Protection and safety devices:</b> First aid for human under electric shock, electric shock protection, insulation, earthing and grounding system, fuses, relays, MCB and ELCB.</p>	8
IV	<p><b>Components and working principles of common home appliances:</b> Inverter and UPS, electric fan, electric rice cooker, electric toaster, electric kettle, electric iron, electric heater, water heater, induction heater, microwave oven, refrigerator, concept of illumination, electric bulbs, CFL, LED lights, energy efficiency in electrical appliances, IS and IE codes.</p>	7
	<p><b>Practicum</b></p> <ol style="list-style-type: none"> <li>1. To make a chart showing Dos and Don'ts of working with electricity.</li> <li>2. To make a chart of different tools used by a technician and write their utility for electrical appliances.</li> <li>3. Handling and use of various types of electrical maintenance tools.</li> <li>4. To make a chart of different types electrical elements likes switches, fuse, thermostat, heating elements, conductors, insulators, capacitors, wires and cables (for up to 15 amp) symbol of various components.</li> <li>5. Handling and use of multimeter for testing and measuring purpose of electrical appliances.</li> <li>6. Dismantling, re-assembling of various parts of transformer and its uses.</li> <li>7. Dismantling, re-assembling of various parts of DC and AC motors and their uses.</li> <li>8. Study of fault diagnosis in small rating electrical transformers and motors.</li> <li>9. Study of various parts and role of earthing system.</li> <li>10. Handling and use of soldering iron for soldering of basic electronics circuit</li> </ol>	60

