

**III B.Tech - I Semester – Regular / Supplementary Examinations
NOVEMBER 2024**

**ELECTRICAL SAFETY
(Common to ALL Branches)**

Duration: 3 hours

Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.

2. All parts of Question must be answered in one place.

BL – Blooms Level

CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1	a)	Demonstrate the principles of electrical safety and security measures with few examples.	L3	CO2 CO3	7 M
	b)	Examine the factors affecting the severity of electric shock in terms of AC and DC shocks.	L4	CO4	7 M
OR					
2	a)	Demonstrate the safety precautions against primary and secondary electric shocks and burns.	L3	CO2	7 M
	b)	Examine the effect of impulse discharge through human body.	L4	CO4	7 M

UNIT-II

3	a)	Examine the requirements of electrical safety for wiring and fittings in domestic appliances.	L4	CO2 CO4	7 M
	b)	Consider a team of three workers has been assigned to install a new submersible pump in a deep well on a large agricultural farm. The pump will be used to irrigate fields during the dry season. The installation requires electrical connections, handling heavy equipment and working near water. Summarize the possible potential hazards and preventive measures for installing pumps.	L3	CO1 CO2 CO4	7 M

OR

4	a)	Examine the electrical hazards and safety aspects to be taken in a multi-storeyed buildings.	L4	CO4	7 M
	b)	Summarise the DO's and DON'T's for safety in commercial and residential utilities against shocks.	L2	CO1 CO2	7 M

UNIT-III

5	a)	Identify the preliminary preparations before commencing installations and justify the requirements of safety during maintenance of a plant.	L3	CO3	7 M
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	b)	Examine about safety aspects and precautions during maintenance of a plant.	L4	CO2 CO4	7 M
OR					
6	a)	Analyze the importance of Safety documentation during operation and maintenance of a plant.	L4	CO3 CO4	7 M
	b)	Compose the procedure for field documentation during quality and safety.	L4	CO3 CO4	7 M
UNIT-IV					
7	a)	A chemical manufacturing plant is equipped with various electrical systems, high-voltage transformers, control panels and machinery. Due to the nature of materials handled, there is a high risk of sparks or flashover, which could ignite the flammable atmosphere. Express the possible hazardous zones, electrical sparks, flashover, explosions and possible preventive measures to be adopted.	L4	CO4 CO5	7 M
	b)	Justify the equipment earthing for the scenario described in 7 (a).	L3	CO2 CO4 CO5	7 M
OR					
8	a)	Justify the need for protection against energized metal parts.	L3	CO2 CO4	7 M
	b)	Illustrate electrical safety in zone-0, zone-1 and zone-2 of hazardous areas.	L2	CO1 CO5	7 M

UNIT-V

9	a)	Justify the need for installation of fire extinguishers in any plant.	L2	CO1 CO5	7 M
	b)	Outline the preventive actions against the prevention of fire in electrical system.	L4	CO2 CO5	7 M

OR

10	a)	Explain the need for electrical safety, fire detection and alarm system in any plant.	L2	CO2 CO5	7 M
	b)	Classify fire extinguishing media and fire extinguishers based on their uses.	L4	CO2 CO5	7 M