Reg.No.:												

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 80004

M.E. / M.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2025
Third Semester
VLSI Design
P23PSOE1 – INDUSTRIAL SAFETY
(Common to Biotechnology)
(Regulation 2023)

Time: Three Hours | Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Compare electric field and magnetic field.	2	K2	CO1
2.	Name any two sources of electromagnetic interference in daily life.	2	K1	CO1
3.	How does the surge protection device ensure the equipment safety from current surges?	2	K1	CO2
4.	Infer the significance of maintaining the minimum clearance in high voltage systems.	2	K2	CO2
5.	State a safe voltage limit and safe current limit for a human body.	2	K1	CO3
6.	Why is under voltage protection equally important as over voltage protection?	2	K1	CO3
7.	Infer the function of discharge rods.	2	K2	CO4
8.	Identify the fail safe design aspects to minimize the electrical risks.	2	K2	CO4
9.	Justify the statement – "intrinsic safety is the only permitted method in Zone 0".	2	K2	CO5
10.	Identify any two explosion proof devices for a chemical industry.	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q. No.		Questions	Marks	KL	CO
11.	a)	Infer the importance of first aid and CPR in electrical emergencies. Explain the procedure to be taken when someone is electrocuted.	13	K2	CO1
		(OR)			
	b)	Relate the Indian Electricity Act and the statutory requirements enforced by the electrical inspectorate and how does these regulations ensure electrical safety?	13	K2	CO1
12.	a)	Compare burns, shocks and scalds in terms of causes, effects and preventive measures.	13	K2	CO2
		(OR)			
	b)	i. Identify the use of ANSI electrical safety code to reduce the workplace hazards.	7	K3	CO2
		ii. Explain why energy leakage is a risk to the human safety.	6	K2	CO2
13.	a)	Identify various types of personal protective equipment and explain how they ensure the workers' safety.	13	K3	CO3
		(OR)			
	b)	i. Explain the protective measures to protect the equipment from over voltages.	7	K2	CO3
		ii. Infer the concept of safe working distances from over head power lines.	6	K2	CO3
14.	a)	Identify the effects of poor cable joints on system safety and reliability. Explain with examples.	13	K3	CO4
		(OR)			
	b)	i. Apply lock out procedure to ensure equipment safety during maintenance.	7	K3	CO4
		ii. Explain why a work permit system is essential in high voltage installation.	6	K2	CO4
15.	a)	Analyze how the hazardous zones are classified by IEC standards and select the equipment to be used in the zones with examples.	13	K4	CO5
		(OR)			
	b)	Examine the importance of various equipment certifying agencies to ensure the safety of the equipment used in hazardous areas.	13	K4	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	A large manufacturing plant suffers repeated equipment breakdown and occasional short circuits. Investigation shows that the protection devices have not been tested regularly and preventive maintenance is irregular. i. Identify the risks in the above cases to personnel and equipment. ii. Propose a preventive maintenance schedule for protection devices and the electrical system.	15	K3	CO4
		(OR)			
	b)	An engineering workshop reports an accident where a worker received a shock while operating a portable drill. Accident investigation reveals damaged insulation on the cable, lack of RCD protection and no regular tool inspections. i. Analyze this in terms of safe handling of electrical tools. ii. Recommend preventive maintenance program iii. Suggest appropriate PPE and safety measures for the worker.	15	K3	CO3