Reg. No.																

Question Paper Code	14511

M.E. / M.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2026

Second Semester

M.E. - Industrial Safety Engineering

24PISPC203 - ELECTRICAL SAFETY

Regulations - 2024

Duration: 3 Hours | Max. Marks: 100

PART – A (i) (MCQ)
(16 × 1 = 16 Marks)
Answer ALL Questions

		Marks	K – Level	CO
1.	Electrostatics deals with a) Moving charges b) Stationary charges c) Magnetic poles d) Current flow	1	K1	CO1
2.	Electrical inspector ensures a) Marketing b) Safety compliance c) Finance d) Production	1	K2	CO1
3.	If EMI affects PLC panel, suitable solution is a) Earthing and shielding b) Increase speed c) Remove switch d) Add oil	1	K3	CO1
4.	Primary hazard of electricity is a) Shock b) Noise c) Smoke d) Dust	1	K1	CO2
5.	Arc flash produces a) Cold air b) Heat and light c) Ice d) Vacuum	1	K2	CO2
6.	Lightning protection for building uses a) Resistor b) Arrester c) Fan d) Motor	1	K3	CO2
7.	ELCB stands for a) Electric Load Control Board b) Earth Leakage Circuit Breaker c) Earth Line Cable Box d) Energy Limit Circuit Board	1	K1	CO3
8.	Continuity test checks a) Open path b) Connected path c) Color d) Length only	1	K2	CO3
9.	Best protection for domestic shock hazard is a) Lamp b) Choke c) Motor d) ELCB/RCCB	1	K3	CO3
10.	Portable tools should be a) Ungrounded b) Properly earthed c) Broken d) Wet	1	K1	CO4
11.	Interlock in panel avoids a) Simultaneous wrong switching b) Lighting c) Earthing d) Painting	1	K2	CO4
12.	Loose terminal found during inspection should be a) Ignored b) Tightened safely c) Cut off d) Painted	1	K3	CO4
13.	Hazardous zone means area with a) Safe water b) Explosive atmosphere c) Garden d) Office tables	1	K1	CO5

14.	Certified barrier failure requires a) Ignore b)Immediate replacement c) Water spray d) Repainting		*1*	*K3*	*CO5*
15.	Flameproof enclosure is used in a) Hazardous areas b) Classroom c) Garden d) Kitchen only		*1*	*K2*	*CO6*
16.	If gas group changes, equipment should be a) Painted b) Re-evaluated c) Ignored d) Removed always		*1*	*K3*	*CO6*

PART – A (ii) (Short Answer Questions)
(6 × 3 = 18 Marks)
Answer ALL Questions

17.	Distinguishbetween magnetic energy and electrical energy.	*3*	*K4*	*CO1*
18.	Apply the control strategy for static electricity.	*3*	*K3*	*CO2*
19.	Compare overload and short circuit protection.	*3*	*K4*	*CO3*
20.	Identify the safety precautions carried out during the installation process.	*3*	*K3*	*CO4*
21.	Identify the usefulness of isolators employed in electrical hazardous zones.	*3*	*K3*	*CO5*
22.	Distinguish between intrinsic safe and explosion proof electrical apparatus.	*3*	*K4*	*CO6*

PART - B (Descriptive Answer Questions)
(6 × 11 = 66 Marks)
Answer ALL Questions

23.	a) (i)	Develop the coulomb's law in vector form.	*5*	*K3*	*CO1*
	(ii)	Develop the expression for electric field intensity due to line charge distribution.	*6*	*K3*	*CO1*
		OR			
	b)	Identify the importance of compliance with statutory regulations and international standards in minimizing electrical hazards and ensuring worker safety.	*11*	*K3*	*CO1*
24.	a)	Apply the standard procedures for installing a safe earthing system and evaluate the importance of regular earth pit maintenance in electrical installations.	*11*	*K3*	*CO2*
		OR			
	b)	Develop the construction, working and installation of a lightning arrestor with suitable diagram.	*11*	*K3*	*CO2*
25.	a)	Construct the connection diagram for overload relay and list out its types with applications.	*11*	*K3*	*CO3*
		OR			
	b)	Construct the working operation of earth leakage circuit breaker with a neat sketch.	*11*	*K3*	*CO3*
26.	a)	Identify the common defects in electrical cables and cable joints, and explain the preventive maintenance practices required to avoid system failures.	*11*	*K3*	*CO4*
		OR			
	b)	Utilize the principle of fail safe design with help of ladder logic.	*11*	*K3*	*CO4*
27.	a)	Analyze the construction and working of explosion-proof electrical apparatus and justify their importance in hazardous industrial environments.	*11*	*K4*	*CO5*
		OR			
	b)	Classify the different electrical equipment certifying agencies in detail.	*11*	*K4*	*CO5*

28. a) Discover the challenges to be met while selecting electrical equipment for hazardous zones. *11* *K4* *CO6*

OR

b) Analyze the barriers in protective maintenance and discuss on the use of barriers and isolators. *11* *K4* *CO6*