

Branch – PG DIPLOMA IN INDUSTRIAL SAFETY
ACCIDENT AND LOSS PREVENTION TECHNIQUES

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	An accident can best be prevented by (i) Punishing workers (ii) Identifying and controlling hazards (iii) Increasing working hours (iv) Ignoring near-miss incidents	K1	CO1
	2	Which analysis technique identifies the root cause using logical diagrams? (i) HAZOP (ii) FTA (iii) JSA (iv) Safety audit	K2	CO1
2	3	Safety training mainly aims to (i) Increase production (ii) Reduce supervision (iii) Improve safe behaviour (iv) Eliminate management	K1	CO2
	4	Human factors contributing to accidents include (i) Machine failure (ii) Unsafe acts (iii) Structural defects (iv) Fire hazards	K2	CO2
3	5	HAZOP is mainly used for (i) Cost analysis (ii) Hazard identification (iii) Training evaluation (iv) Accident reporting	K1	CO3
	6	Failure Modes and Effects Analysis focuses on (i) Consequences of failures (ii) Legal compliance (iii) Fire prevention (iv) Worker motivation	K2	CO3
4	7	Safety audit is conducted to (i) Increase profit (ii) Ensure legal compliance (iii) Improve product quality (iv) Reduce manpower	K1	CO4
	8	A work permit system is mainly used to (i) Authorize hazardous jobs (ii) Increase productivity (iii) Train workers (iv) Inspect machinery	K2	CO4
5	9	The primary purpose of accident investigation is to (i) Fix responsibility (ii) Find root causes (iii) Claim insurance (iv) Punish workers	K1	CO5
	10	First aid for electric shock includes (i) Immediate water splash (ii) Separating victim from source (iii) Applying ointment (iv) Bandaging immediately	K2	CO5

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks

(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain the principles of accident prevention and accident causation theories.	K1/K2	CO1
		(OR)		
	11.b.	Discuss hazard identification methods with suitable examples.		

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2		(OR)	K3	CO2
	12.b.	Analyze and illustrate the causes of unsafe acts in industrial environments and apply the principles of safety education and training to prevent accidents.		
3	13.a.	Apply and analyze Fault Tree Analysis (FTA) and Event Tree Analysis (ETA) techniques for accident prevention, using suitable industrial examples.	K4	CO3
		(OR)		
	13.b.	How can HAZOP studies and Job Safety Analysis (JSA) be applied as systematic tools for hazard identification and risk control.		
4	14.a.	Evaluate and design an effective plant safety inspection system by examining its objectives, various inspection types, and the preparation of inspection reports.	K5	CO4
		(OR)		
	14.b.	Critically evaluate and develop a safety audit framework for industries by assessing audit elements, applicable standards, and their advantages in loss prevention.		
5	15.a.	Formulate and assess a structured accident investigation and reporting system that supports corrective and preventive action in industrial organizations.	K6	CO5
		(OR)		
	15.b.	Critically assess and develop a comprehensive approach to accident classification and investigation by examining accident types, purposes, and systematic investigation steps.		

SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Explain accident statistics, types of accidents, and direct and indirect costs of accidents.	K3	CO1
2	17	Apply appropriate safety education and training methods to industrial situations and demonstrate how safety promotion schemes can be implemented to improve workplace safety.	K3	CO2
3	18	A chemical processing plant experienced several near-miss incidents during the operation of a solvent transfer system from storage tanks to the reactor. Issues reported include improper valve operation, leakage at pipe joints, absence of standard operating procedures, and inadequate worker training. The management wants to systematically identify hazards and implement effective risk control measures to prevent future accidents. a) Explain how Job Safety Analysis (JSA) can be carried out for the solvent transfer operation. b) Describe how a HAZOP study can be applied to the same process, highlighting guide words, deviations, causes, and consequences. c) Suggest suitable risk control and preventive measures based on the findings of JSA and HAZOP.	K4	CO3
4	19	Evaluate the effectiveness of safety appraisal and control techniques, including Standard Operating Procedures (SOPs), work permit systems, safety surveys, and Total Loss Control, in minimizing industrial accidents.	K5	CO4
5	20	Design a comprehensive industrial emergency management plan by integrating accident investigation procedures, worker rehabilitation strategies, and detailed first aid measures for emergency situations.	K6	CO5

Z-Z-Z END