

C-6858

Sub. Code

30711

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025

First Semester

Environment and Industrial Safety

FIRE PREVENTION AND PROTECTION

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. Which of the following describes the process of convection?
 - (a) Heat transfer through direct contact
 - (b) Heat transfer through electromagnetic waves
 - (c) Heat transfer through the movement of fluids
 - (d) Heat transfer in a vacuum

2. The fire point of a substance is:
 - (a) The temperature at which it ignites spontaneously
 - (b) The lowest temperature at which it gives off enough vapor to form an ignitable mixture
 - (c) The temperature at which it continues to burn after the ignition source is removed
 - (d) The temperature at which it explodes

3. A fire involving flammable liquids like gasoline and oil is classified as:
- (a) Class A
 - (b) Class B
 - (c) Class C
 - (d) Class D
4. Which of the following is NOT a method of extinguishing a fire?
- (a) Removing the fuel
 - (b) Adding more oxygen
 - (c) Cooling the fire
 - (d) Smothering the fire
5. Which fire extinguisher is suitable for Class A fires?
- (a) CO₂
 - (b) Dry chemical
 - (c) Water
 - (d) Foam
6. Which type of detector is activated by a rise in temperature?
- (a) Smoke detector
 - (b) Flame detector
 - (c) Heat detector
 - (d) UV detector

7. An air sampling detector works by:
- (a) Detecting changes in light intensity
 - (b) Analyzing air samples for smoke particles
 - (c) Sensing heat radiated from a fire
 - (d) Detecting the presence of flames
8. What is the purpose of a fire service inlet?
- (a) To provide a connection for fire department hoses to supplement the water supply
 - (b) To store water for firefighting
 - (c) To activate the fire alarm system
 - (d) To provide emergency lighting
9. Travel distance in exit design refers to:
- (a) The distance a person must travel to reach an exit
 - (b) The width of the exit
 - (c) The height of the exit
 - (d) The number of exits
10. Which of these is a characteristic of a flammable liquid?
- (a) High flash point
 - (b) Low flash point
 - (c) Non-combustible
 - (d) Stable at room temperature

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the fire tetrahedron and its significance in fire prevention and suppression.

Or

- (b) Describe the process of fire load calculation and its application in building design.

12. (a) Discuss the factors influencing the number and size of fire extinguishers required for a given occupancy.

Or

- (b) Explain the importance of regular maintenance of fire extinguishers.

13. (a) Describe the different types of smoke detectors and their operating principles.

Or

- (b) Explain the process of testing fire detection and alarm systems.

14. (a) Discuss the design considerations for internal and external fire hydrant systems.

Or

- (b) Explain the testing procedures for fire hydrants and associated equipment.

15. (a) Describe the factors to be considered when designing fire exits.

Or

- (b) Explain the hazards associated with storage of flammable liquids, and the preventive measures to be taken.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Analyse the fire safety challenges in educational institutions and suggest appropriate fire prevention and protection measures.

Or

- (b) Discuss the fire safety requirements for shopping malls with suitable sketches.

17. (a) Evaluate the suitability of different types of fire extinguishers for various fire classes and occupancies.

Or

- (b) Explain the procedures for refilling fire extinguishers and the quality control measures to ensure their effectiveness.

18. (a) Discuss the factors to consider when selecting the location of manual call points and the importance of their visibility and accessibility.

Or

- (b) Explain the role of spares management in ensuring the availability of fire detection and alarm systems.

19. (a) Discuss the firefighting requirements for warehouses and garages in detail.

Or

- (b) Explain the challenges and solutions for fire protection in chemical laboratories.
20. (a) Evaluate the effectiveness of different fire escape and staircase designs in facilitating safe and rapid evacuation during a fire.

Or

- (b) Discuss the hazards associated with hot work activities, such as welding and cutting, and the necessary precautions to prevent fires and explosions.
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C-6859

Sub. Code

30712

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025

First Semester

Environment and Industrial Safety

ORGANIZATIONAL BEHAVIOUR

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. Which management function involves bringing together physical, financial and human resources?
 - (a) Planning
 - (b) Organizing
 - (c) Staffing
 - (d) Controlling

2. Which of the following is NOT one of Fayol's 14 principles of management?
 - (a) Esprit de corps
 - (b) Micromanagement
 - (c) Equity
 - (d) Order

3. Forecasting is
 - (a) Setting objectives
 - (b) Predicting future trends
 - (c) Making decisions
 - (d) Motivating employees

4. Which of the following is an advantage of a formal organization?
 - (a) Flexibility
 - (b) Clarity of roles
 - (c) Informal communication
 - (d) Rapid adaptation to change

5. Centralization refers to
 - (a) Delegating authority
 - (b) Concentrating power at the top
 - (c) Empowering employees
 - (d) Creating autonomous teams

6. Which leadership theory focuses on the exchange relationship between leaders and followers?
 - (a) Trait theory
 - (b) Behavioral theory
 - (c) Contingency theory
 - (d) Transactional leadership theory

7. Recruitment is the process of
 - (a) Training employees
 - (b) Evaluating performance
 - (c) Attracting potential candidates
 - (d) Selecting the best candidate

8. Which of the following is a technique of control?
 - (a) Budgetary control
 - (b) Motivation
 - (c) Leadership
 - (d) Planning

9. Groupthink is
- (a) A type of conflict
 - (b) A phenomenon where group members strive for consensus and suppress dissenting opinions
 - (c) A stage of group development
 - (d) A method of communication
10. Which of the following is a trend in international business?
- (a) Globalization
 - (b) Technological advancements
 - (c) Increased competition
 - (d) All of the above

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the different approaches to management.

Or

- (b) Discuss the steps involved in planning.

12. (a) Describe the characteristics of effective leadership.

Or

- (b) Explain the importance of delegation of authority.

13. (a) Discuss the essentials of a good control system.

Or

- (b) Explain the role of management information systems.

14. (a) Describe the factors influencing perception.

Or

- (b) Explain the different types of groups.

15. (a) Discuss the coping strategies for stress.

Or

(b) Explain the concept of culture shock and its impact on individuals.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Analyze the different management theories.

Or

(b) Discuss the process of organization and the principles involved.

17. (a) Evaluate the importance of motivation and explain the different theories of motivation.

Or

(b) Discuss the concept of span of management and its implications.

18. (a) Explain the techniques of control and their applications.

Or

(b) Discuss the challenges and opportunities in international management.

19. (a) Describe the process of group development and the functions of groups.

Or

(b) Explain the different types of conflict and the conflict management process.

20. (a) Discuss the nature and scope of organizational behaviour and its importance in the workplace.

Or

(b) Explain the impact of cultural differences on organizational behaviour and management practices.

C-6860

Sub. Code

30713

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025.

First Semester

Environment and Industrial Safety

INDUSTRIAL SAFETY MANAGEMENT

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. Which of the following describes conduction?
 - (a) Heat transfer through electromagnetic waves
 - (b) Heat transfer through the movement of fluids
 - (c) Heat transfer through direct contact
 - (d) Heat transfer in a vacuum

2. Fire point is:
 - (a) The temperature at which a substance ignites spontaneously
 - (b) The lowest temperature at which a liquid gives off enough vapor to form an ignitable mixture
 - (c) The temperature at which a liquid continues to burn after the ignition source is removed
 - (d) The temperature at which a solid melts

3. A fire involving combustible metals is classified as:
 - (a) Class A
 - (b) Class B
 - (c) Class C
 - (d) Class D

4. Cooling a fire primarily targets which element of the fire triangle?
(a) Fuel (b) Oxygen
(c) Heat (d) Chemical reaction
5. Which fire extinguisher is best suited for Class D fires?
(a) Water (b) CO₂
(c) Dry powder (d) Foam
6. Safety glasses primarily protect against:
(a) Impact and flying particles
(b) Chemical splashes
(c) Radiation
(d) Noise
7. Which type of glove is suitable for handling sharp objects?
(a) Cotton gloves (b) Latex gloves
(c) Leather gloves (d) Nitrile gloves
8. A water flow alarm in a sprinkler system indicates:
(a) A fire has been detected
(b) The system is malfunctioning
(c) Water is flowing through the pipes
(d) The water supply is low
9. Which of these is a physical hazard to the skin?
(a) Chemicals (b) Radiation
(c) Sharp objects (d) All of the above
10. A color code on a respirator canister indicates:
(a) The type of contaminant the filter protects against
(b) The expiration date of the filter
(c) The manufacturer of the filter
(d) The size of the filter

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the concept of a “flashover” in a fire.

Or

- (b) Describe the different types of personal protective equipment (PPE) and their uses.

12. (a) Discuss the importance of eye protection in the workplace and describe the different types of safety glasses and goggles.

Or

- (b) Explain the operating principles of different types of fire extinguishers.

13. (a) Describe the different types of leg protection and their applications.

Or

- (b) Explain the different types of sprinkler systems and their uses.

14. (a) Discuss the basic considerations for installing fire alarm systems.

Or

- (b) Explain the measures to prevent skin injuries and diseases caused by chemical exposure.

15. (a) Describe the hazards associated with working in confined spaces.

Or

- (b) Explain the safe handling and storage of flammable and combustible liquids, including loading and unloading procedures.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Analyse the importance of safety training and education in preventing workplace accidents.

Or

- (b) Discuss the legal and ethical responsibilities of employers in providing a safe working environment.

17. (a) Evaluate the effectiveness of different types of hand protection for various tasks and hazards.

Or

- (b) Explain the procedures for inspecting, maintaining, and testing fire extinguishers and other firefighting equipment.

18. (a) Discuss the factors to consider when selecting and installing a sprinkler system for a specific occupancy.

Or

- (b) Explain the different types of fire alarm systems and their components, including initiation devices and notification appliances.

19. (a) Describe the different types of respirators and their appropriate uses in various hazardous atmospheres.

Or

- (b) Discuss the measures to protect workers from skin hazards, including the use of protective clothing and creams.

20. (a) Explain the procedures for selecting, using, and maintaining respiratory protection equipment, including fit testing and cartridge change-out.

Or

- (b) Discuss the hazards associated with hot work, such as welding and cutting, and the necessary precautions to prevent fires and explosions.

C-6861

Sub. Code

30714

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025

First Semester

Environment and Industrial Safety

**SAFETY MANAGEMENT IN CONSTRUCTIONAL
SECTOR**

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. What is a common cause of accidents related to scaffolding?
 - (a) Properly installed guardrails
 - (b) Overloading
 - (c) Regular inspections
 - (d) Use of safety harnesses

2. Which activity is associated with a high risk of falls?
 - (a) Working at ground level
 - (b) Working on roofs
 - (c) Operating heavy machinery at a safe distance
 - (d) Using hand tools with proper training

3. What does “confined space” refer to in construction safety?
 - (a) A large open area
 - (b) An enclosed or restricted space with limited entry and exit
 - (c) A well-ventilated area
 - (d) A space with ample natural light

4. Which of the following is essential for safe blasting operations?
 - (a) Ignoring pre-blast surveys
 - (b) Clearing the blast zone
 - (c) Using untrained personnel
 - (d) Rushing the process

5. What is the purpose of a safety net in construction?
 - (a) To catch falling debris
 - (b) To prevent workers from falling
 - (c) To protect the public from dust
 - (d) To store materials

6. Which piece of equipment is used for vertical lifting of materials?
 - (a) Excavator
 - (b) Crane
 - (c) Bulldozer
 - (d) Grader

7. What is a primary concern when working with welding machines?
- (a) Proper ventilation
 - (b) Eye protection
 - (c) Fire hazards
 - (d) All of the above
8. What is a key safety practice when using portable electrical tools?
- (a) Checking for damaged cords and plugs
 - (b) Using tools in wet conditions
 - (c) Ignoring safety instructions
 - (d) Overloading the tool
9. What is a crucial step before starting demolition work?
- (a) Ignoring existing building plans
 - (b) Conducting a pre-survey inspection
 - (c) Demolishing without site supervision
 - (d) Rushing the process
10. What is a common fire hazard on construction sites?
- (a) Improper storage of flammable materials
 - (b) Regular fire drills
 - (c) Availability of fire extinguishers
 - (d) Enforcement of no-smoking policies

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the causes of fatal accidents in the construction industry.

Or

- (b) Describe the essential components of a comprehensive safety management system.

12. (a) Discuss the safety hazards associated with excavations and trenches.

Or

- (b) Explain the importance of scaffold inspection checklists and their key elements.

13. (a) Describe the different types of fall arrest systems and their proper use.

Or

- (b) Explain the safety requirements for working on fragile roofs.

14. (a) Discuss the safety precautions to be taken when operating mobile cranes.

Or

- (b) Explain the hazards associated with manual handling of materials and preventive measures.

15. (a) Discuss the safety considerations for demolition using explosives.

Or

- (b) Explain the role of first aid and emergency response in construction site safety.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Analyse the human factors contributing to construction accidents and suggest strategies for improvement.

Or

- (b) Evaluate the effectiveness of various safety training methods for construction workers.

17. (a) Explain the challenges and safety measures for working on contaminated sites.

Or

- (b) Describe the safety protocols for working over water, including rescue procedures.

18. (a) Evaluate the importance of safety monitoring systems in preventing falls from heights.

Or

- (b) Discuss the legal and ethical responsibilities of employers in ensuring worker safety at heights.

19. (a) Discuss the safety aspects related to the use of conveyors and mobile cranes in construction.

Or

- (b) Analyse the impact of technology on improving safety in construction, with examples.
20. (a) Explain the different methods of demolition and the safety considerations for each, including waste management.

Or

- (b) Discuss the long-term health hazards associated with demolition work and the measures to protect workers.
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C-6862

Sub. Code

30715

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025

First Semester

Environment and Industrial Safety

ENVIRONMENTAL STUDIES

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. The scope of environmental studies includes:
 - (a) Solely economic development
 - (b) Interactions between humans and their surroundings
 - (c) Isolated geological formations
 - (d) Only biological aspects

2. The primary goal of promoting public awareness in environmental studies is to:
 - (a) Ignore ecological imbalances
 - (b) Encourage sustainable living
 - (c) Increase industrial production
 - (d) Promote excessive resource consumption

3. Overexploitation of groundwater can lead to:
- (a) Enhanced biodiversity
 - (b) Land subsidence and salinity
 - (c) Improved air quality
 - (d) Increased soil fertility
4. Which of the following is a non-renewable resource?
- (a) Tidal energy
 - (b) Petroleum
 - (c) Geothermal energy
 - (d) Wind energy
5. The concept of an ecosystem emphasizes:
- (a) Random environmental changes
 - (b) Interactions between biotic and abiotic factors
 - (c) Isolated species survival
 - (d) Individual organism growth
6. A “hotspot” of biodiversity is characterized by:
- (a) Uniform distribution of species
 - (b) High endemism and significant habitat loss
 - (c) Stable geological formations
 - (d) Low species diversity and high pollution

7. The primary source of marine pollution is:
- (a) Volcanic eruptions
 - (b) Industrial discharge and domestic waste
 - (c) Solar radiation
 - (d) Agricultural runoff
8. Thermal pollution primarily affects:
- (a) Soil composition
 - (b) Aquatic ecosystems
 - (c) Geological structures
 - (d) Atmospheric ozone layer
9. Field visits to polluted sites are conducted to:
- (a) Collect geological samples
 - (b) Assess pollution levels and impacts
 - (c) Encourage industrial expansion
 - (d) Promote tourism
10. Studying common plants and insects helps in:
- (a) Ignoring environmental regulations
 - (b) Understanding local ecosystem dynamics
 - (c) Promoting urban development
 - (d) Developing new pesticides

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the importance of public awareness in environmental conservation.

Or

- (b) Briefly describe the impact of mining on tribal communities.

12. (a) What are the benefits and problems associated with large dams?

Or

- (b) Discuss the role of an individual in conserving natural resources,

13. (a) Explain the concept of ecological pyramids.

Or

- (b) Describe the threats to biodiversity in India.

14. (a) What are the effects of noise pollution?

Or

- (b) Differentiate between in-situ and ex-situ conservation.

15. (a) Describe the steps involved in documenting environmental assets during fieldwork.

Or

- (b) Explain the importance of studying simple ecosystems.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Analyse the impact of modern agricultural practices on food resources and the environment.

Or

- (b) Discuss the various renewable and non-renewable energy sources, and their environmental implications.

17. (a) Evaluate the causes and effects of deforestation, and suggest measures for sustainable forest management.

Or

- (b) Discuss the conflicts over water resources and propose solutions for equitable water distribution.

18. (a) Explain the concept of biodiversity hotspots and their significance in conservation.

Or

- (b) Describe the structure and function of an ecosystem, with examples.

19. (a) Analyse the causes, effects, and control measures of air pollution.

Or

- (b) Discuss the environmental hazards associated with nuclear energy and waste.
20. (a) Describe the process of conducting a field visit to a local polluted site, highlighting the key observations and data collected.

Or

- (b) Explain the importance of studying common plants, insects, and birds in understanding local ecosystems.
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C-6863

Sub. Code

30716A

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025

First Semester

Environment and Industrial Safety

SAFETY IN PROCESS INDUSTRIES

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. What is the primary goal of a HAZOP study?
 - (a) To identify potential hazards and operability problems
 - (b) To design pressure relief systems
 - (c) To conduct plant inspections
 - (d) To develop emergency procedures

2. Which of the following is NOT a typical unit operation in a chemical plant?
 - (a) Distillation
 - (b) Filtration
 - (c) Accounting
 - (d) Drying

3. ASME Section VIII Div. 1 provides guidelines for
 - (a) Pressure vessel design and construction
 - (b) Pipeline inspection
 - (c) Fire protection systems
 - (d) Electrical installations

4. Plant commissioning involves
 - (a) Designing the plant
 - (b) Constructing the plant
 - (c) Starting up and testing the plant
 - (d) Decommissioning the plant

5. Acoustic emission testing is used to detect
 - (a) Leaks
 - (b) Corrosion
 - (c) Cracks and defects
 - (d) Vibration

6. A trip system is designed to
 - (a) Increase production rate
 - (b) Shut down equipment in emergencies
 - (c) Monitor plant performance
 - (d) Control process variables

7. Isolation in maintenance refers to
 - (a) Cleaning equipment
 - (b) Removing hazardous substances
 - (c) Disconnecting equipment from energy sources
 - (d) Repairing equipment

8. Confined space entry requires
- (a) Proper ventilation
 - (b) Gas monitoring
 - (c) Permit system
 - (d) All of the above
9. Flame arrestors are used to
- (a) Prevent the spread of fire through vapor lines
 - (b) Extinguish fires
 - (c) Detect fires
 - (d) Activate alarms
10. Secondary containment in storage areas is designed to
- (a) Prevent leaks
 - (b) Contain spills
 - (c) Extinguish fires
 - (d) Provide access for maintenance

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the concept of inherently safer design and its principles.

Or

- (b) Describe the different types of chemical reactors and their safety considerations.

12. (a) Discuss the importance of pre-commissioning and post-commissioning documentation.

Or

- (b) Explain the different types of pressure testing and their applications in plant inspection.
13. (a) Describe the purpose and importance of handover and permit systems in plant operation.

Or

- (b) Explain the hazards associated with fired heaters and driers, and the safety precautions to be taken.
14. (a) Discuss the procedures for isolating, purging, and cleaning equipment before maintenance.

Or

- (b) Explain the control of modifications process and its importance in plant safety.
15. (a) Describe the different types of venting and relief devices used in storage tanks.

Or

- (b) Explain the specific storage requirements for hydrogen and toxic chemicals, such as chlorine and ammonia.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Analyse the role of pressure vessel design standards and codes in ensuring safety.

Or

- (b) Discuss the different types of failures in pressure systems and their causes.

17. (a) Evaluate the importance of plant monitoring and the different techniques used for monitoring performance and condition.

Or

- (b) Explain the methods for pipeline inspection and the role of non-destructive testing in pipeline integrity.

18. (a) Discuss the importance of trip systems and their role in preventing accidents.

Or

- (b) Explain the hazards associated with exposure of personnel to hazardous substances and the safety measures to protect them.

19. (a) Describe the procedures for hot work and the safety precautions to be taken during hot work activities.

Or

- (b) Discuss the emergency planning process and the different types of emergencies that may occur in a chemical plant.

20. (a) Explain the fire prevention and protection measures for storage areas, including fire relief systems and firefighting equipment.

Or

- (b) Discuss the storage hazard assessment process for LPG and LNG, and the risk mitigation measures.
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C-6864

Sub. Code

30716B

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025.

First Semester

Environment and Industrial Safety

WORK STUDY AND ERGONOMICS

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. Work study primarily focuses on:
 - (a) Improving productivity and efficiency
 - (b) Designing safety equipment
 - (c) Managing finances
 - (d) Training employees
2. Work content refers to:
 - (a) The amount of work done
 - (b) The total time taken to complete a task
 - (c) All the activities involved in a task
 - (d) The skill level required for a task
3. Ergonomics aims to:
 - (a) Maximize profits
 - (b) Design tasks and environments to fit people
 - (c) Increase machine speed
 - (d) Reduce labor costs

4. Which of the following is a principle of motion economy?
 - (a) Use of simultaneous movements
 - (b) Increased distance traveled
 - (c) Use of jerky movements
 - (d) Minimizing eye contact

5. PPE stands for:
 - (a) Personal Protective Equipment
 - (b) Plant Production Efficiency
 - (c) Process Performance Evaluation
 - (d) planned Preventative Engineering

6. Which of the following is NOT a type of PPE?
 - (a) Safety helmet
 - (b) Fire extinguisher
 - (c) Safety goggles
 - (d) Gloves

7. Machine guarding is primarily intended to:
 - (a) Improve machine performance
 - (b) Protect operators from hazards
 - (c) Increase production speed
 - (d) Reduce maintenance costs

8. Which of these is a factor to consider in machine layout?
 - (a) Safety
 - (b) Efficiency
 - (c) Accessibility
 - (d) All of the above

9. Man-machine systems involve the interaction between:
 - (a) Workers and machines
 - (b) Managers and employees
 - (c) Machines and other machines
 - (d) Computers and software

10. Fatigue can be:
 - (a) Physical
 - (b) Mental
 - (c) Both physical and mental
 - (d) Neither physical nor mental

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the steps involved in a work study.

Or

- (b) Discuss the human factors that influence workplace safety.

12. (a) Describe the application of ergonomic principles in the design of workbenches.

Or

- (b) Explain the principles of motion economy and their importance in work design.

13. (a) Discuss the different types of personal protective equipment (PPE) and their selection criteria.

Or

- (b) Explain the procurement, storage, inspection and testing procedures for PPE.

14. (a) Describe the key considerations in process and equipment design for safety.

Or

- (b) Explain the importance of operator training and supervision in ensuring safe machine operation.

15. (a) Discuss the job and personal risk factors in man-machine systems.

Or

- (b) Explain the types of controls and displays used in man-machine interfaces and their design considerations.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Analyse the importance of productivity, quality, and safety (PQS) in the workplace.

Or

- (b) Discuss the role of robotics in hazardous workplaces and their impact on safety and productivity.

17. (a) Evaluate the impact of fatigue and physical/mental strain on worker performance and safety.

Or

- (b) Explain the physiological aspects of workers and their relevance in ergonomic design.

18. (a) Discuss the ergonomic considerations in PPE design and their impact on worker comfort and safety.

Or

- (b) Explain the quality standards and ergonomic considerations for PPE.

19. (a) Discuss the safety devices and methods used in machine guarding and their effectiveness.

Or

- (b) Explain the statutory provisions related to machine safety and the responsibilities of employers and employees.

20. (a) Explain the guidelines for safe design and posture evaluation in man-machine systems.

Or

- (b) Discuss the compatibility and stereotypes of important operations in man-machine interfaces and their influence on performance and safety.

C-6865

Sub. Code

30721

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025

Second Semester

Environment and Industrial Safety

EVOLUTION OF MODERN SAFETY CONCEPTS

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. Which of the following is a proactive tool used to identify and assess potential hazards in a specific job or task?
 - (a) Incident Recall Technique (IRT)
 - (b) Job Safety Analysis (JSA)
 - (c) Safety Audit
 - (d) Disaster Control

2. The concept of 'optimization of productivity' in industrial safety management refers to:
 - (a) Maximizing production at any cost
 - (b) Balancing productivity with safety and quality
 - (c) Prioritizing safety over productivity
 - (d) Eliminating all risks to achieve maximum productivity

3. Herzberg's Motivational Theory identifies two factors that influence employee satisfaction and motivation. Which of these are considered hygiene factors?
 - (a) Achievement and recognition
 - (b) Growth and responsibility
 - (c) Salary and working conditions
 - (d) Advancement and personal development

4. The Deming Cycle, also known as PDCA, is a continuous improvement model. What does PDCA stand for?
 - (a) Plan, Do, Check, Act
 - (b) Prepare, Direct, Control, Assess
 - (c) Predict, Decide, Correct, Analyze
 - (d) Produce, Distribute, Consume, Adapt

5. The process of determining the likelihood and severity of a potential hazard is known as:
 - (a) Hazard identification
 - (b) Risk analysis
 - (c) Risk assessment
 - (d) Risk mitigation

6. Which type of risk assessment focuses on numerical probabilities and consequences to quantify risks?
 - (a) Qualitative risk assessment
 - (b) Semi quantitative risk assessment
 - (c) Quantitative risk assessment
 - (d) Preliminary hazard analysis

7. Heinrich's Axioms of Industrial Safety emphasize that accidents are primarily caused by:
 - (a) unsafe acts and unsafe conditions
 - (b) Faulty equipment and machinery
 - (c) Lack of training and supervision
 - (d) Environmental factors and natural disasters

8. Which investigation technique focuses on sequencing events leading up to an accident to identify critical failures and contributing factors?
 - (a) Gross Hazard Analysis
 - (b) Job Safety Analysis
 - (c) Multilinker Events Sequencing Method
 - (d) The Scientific Method

9. The term "maintainability" in the context of reliability refers to:
 - (a) The probability that a system will function without failure for a specified period
 - (b) The ease and speed with which a system can be repaired or restored to operational condition
 - (c) The overall lifespan of a product or system
 - (d) The process of analyzing failure data to predict product life

10. An O.C. Curve (Operating Characteristic Curve) is used in acceptance sampling to
 - (a) determine the sample size required for a given level of confidence
 - (b) assess the relationship between sample size and the probability of accepting a lot
 - (c) calculate the average lifespan of a product
 - (d) identify the most common causes of failure in a system

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Define “safety culture” and discuss its importance in preventing accidents. What elements make a strong safety culture?

Or

- (b) Explain job safety analysis (JSA). Describe its steps and how it’s used to identify and control hazards.

12. (a) Why is communication important in safety management? What communication channels can be used to promote safety?

Or

- (b) Explain “management commitment” to safety and how top management can demonstrate it. What impact does this have on safety performance?

13. (a) Define “hazard” and “risk” in safety management. How are they related? Give examples from industrial settings.

Or

- (b) Discuss the importance of training in workplace safety. What types of training are most effective?

14. (a) What is the epidemiological theory of accident causation? How does it differ from other theories, and what are its implications for accident prevention?

Or

- (b) Explain “root cause analysis” in accident investigation, why is it important, and what methods can be used?

15. (a) Discuss “product development” and its relation to reliability. How can reliability be integrated into product development?

Or

- (b) Explain “availability” in reliability. How is it calculated, and what factors influence it?

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Critically evaluate safety committees’ role in promoting a safe workplace. What are their functions, and how can they be effective?

Or

- (b) Discuss challenges and strategies in implementing a Safety Management System (SMS). What are its key components, and how can successful implementation be ensured?

17. (a) Explain “safety climate” and its relation to safety performance. What factors contribute to a positive climate, and how can it be improved?

Or

- (b) Describe types of safety leadership and their impact. What qualities make an effective safety leader, and how can they be developed?

18. (a) Discuss ‘risk perception’ and its role in safety behavior. How do individuals perceive risks, and what factors influence it? How can this improve safety communication?

Or

- (b) Explain “safety by design” and its application in product development. How can safety be integrated into design for inherently safer products?
19. (a) Discuss the role of government regulations in workplace safety. What are the benefits and limitations? How can organizations comply while remaining productive?

Or

- (b) Critically evaluate insurance’s role in safety management. How can it incentivize safety, and what are the drawbacks of relying on it?
20. (a) Discuss “lifetime testing” in reliability engineering. What are the different types, and how is data used to improve design and predict failures?

Or

- (b) Explain “acceptance sampling” in quality control. How is it used to determine batch acceptability based on reliability tests? Discuss its advantages and limitations.
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C-6866

Sub. Code

30722

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025

Second Semester

Environment and Industrial Safety

EHS LEGISLATIONS

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. Under the Factories Act 1948, what is the minimum age for employment?
 - (a) 12 years
 - (b) 14 years
 - (c) 16 years
 - (d) 18 years

2. Which of the following is NOT a responsibility of the occupier under the Tamil Nadu Factories Rules 1950?
 - (a) Providing adequate ventilation and lighting
 - (b) Ensuring safe drinking water for workers
 - (c) Organizing regular health check-ups for workers
 - (d) Paying wages above the minimum wage prescribed by law

3. Which of the following is NOT a type of pollution covered under the Environment Protection Act, 1986?
- (a) Air pollution
 - (b) Water pollution
 - (c) Noise pollution
 - (d) Genetic pollution
4. What is the primary objective of the Bio-Medical Waste (Management and Handling) Rules, 1989?
- (a) To promote recycling of medical waste
 - (b) To ensure safe and scientific disposal of bio-medical waste
 - (c) To regulate the pricing of medical services
 - (d) To encourage the use of disposable medical products
5. Who is responsible for submitting a safety report under the Manufacture, Storage and Import of Hazardous Chemical Rules, 1989?
- (a) The local police department
 - (b) The Central Pollution Control Board
 - (c) The occupier of the facility handling hazardous chemicals
 - (d) The Ministry of Environment, Forest and Climate Change

6. What is the purpose of an On-Site Emergency Plan under the Manufacture, Storage and Import of Hazardous Chemical Rules, 1989?
- (a) To outline marketing strategies for hazardous chemicals
 - (b) To detail procedures for responding to accidents involving hazardous chemicals within the facility
 - (c) To assess the environmental impact of hazardous chemicals
 - (d) To determine the pricing of hazardous chemicals
7. Which Act in India deals with the regulation and safety of boilers and pressure vessels?
- (a) The Factories Act, 1948
 - (b) The Indian Boiler Act, 1923
 - (c) The Mines Act, 1952
 - (d) The Petroleum Act, 1934
8. The Building and Other Construction Workers Act, 1996 primarily aims to:
- (a) Regulate the import of construction materials
 - (b) Promote sustainable building practices
 - (c) Protect the rights and welfare of construction workers
 - (d) Control the pricing of construction projects
9. Which international standard focuses on environmental management systems?
- (a) OHSAS 18001
 - (b) ISO 9001
 - (c) ISO 14001
 - (d) ANSI Z10

10. The Health and Safety at Work etc. Act (HASAW) is a legislation in which country?
- (a) United States
 - (b) India
 - (c) United Kingdom
 - (d) Canada

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What is a “hazardous process” under the Factories Act, 1948? Explain the required precautions.

Or

- (b) Outline the penalties and procedures for non-compliance with the Factories Act and the corresponding Tamil Nadu rules.

12. (a) Explain the concept of “No Objection Certificate” (NOC) from statutory authorities like the Pollution Control Board.

Or

- (b) Explain the key features and noise level limits under the Noise Pollution Rules, 2000.

13. (a) Describe the process and key components of a safety report for major accident hazard installations under the Hazardous Chemical Rules.

Or

- (b) Explain the concept of “risk assessment” for hazardous chemicals and the steps involved.

14. (a) Explain the Indian Boiler Act's provisions for inspection and certification of boilers, highlighting the role of the Chief Inspector.

Or

- (b) Explain the role of the Petroleum Rules in ensuring the safe storage, handling, and transportation of petroleum products.
15. (a) Discuss the significance of the American National Standards Institute (ANSI) in developing safety standards and promoting workplace safety.

Or

- (b) Summarize the main features and objectives of the William-Steiger Act of 1970).

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Critically evaluate the Factories Act 1948, analyzing its relevance to modern workplaces and suggesting improvements.

Or

- (b) Discuss the impact of the Tamil Nadu Factories Rules on worker welfare, assessing the sufficiency of the provisions.
17. (a) Discuss the Central Government's powers under the Environment Protection Act, assessing their effectiveness and suggesting improvements.

Or

- (b) Analyze the implementation of Bio-Medical Waste and Noise Pollution Rules, identifying challenges and suggesting solutions.

18. (a) Explain the concept of “offsite emergency plans” under the Hazardous Chemicals Rules, covering key elements and stakeholder roles.

Or

- (b) Discuss the purpose and contents of safety reports under the Hazardous Chemicals Rules, emphasizing their role in preventing accidents.
19. (a) Discuss the Mines Act 1952’s provisions on worker safety, health, and welfare, assessing its effectiveness in preventing accidents.

Or

- (b) Discuss the Building and Other Construction Workers Act’s key provisions and assess its impact on construction workers’ lives.
20. (a) Compare and contrast occupational safety and health standards in the USA, UK, and India. Identify best practices that could be adopted in India.

Or

- (b) Analyze the significance of OHSAS 18001 and ISO 14001, discussing challenges in their implementation in developing countries.
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C-6867

Sub. Code

30723

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025

Second Semester

Environmental and Industrial Safety

PROCESS SAFETY MANAGEMENT

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** the questions.

1. Which document outlines the maximum intended inventory of a regulated substance in a process?
 - (a) Process Flow Diagram (PFD)
 - (b) Piping and Instrumentation Diagram (P&ID)
 - (c) Maximum Intended Inventory (MII) document
 - (d) Material Safety Data Sheet (MSDS)

2. What design consideration is crucial for ensuring proper air exchange and removal of hazardous substances in a process area?
 - (a) Relief System Design
 - (b) Ventilation System Design
 - (c) Electrical Classification
 - (d) Piping and instrumentation Diagrams

3. Which Process Hazard Analysis (PHA) method uses a structured team approach to identify potential deviations from normal operation and their consequences?
 - (a) What-If Analysis
 - (b) Checklist Analysis
 - (c) HAZOP
 - (d) FMEA

4. What is the purpose of documenting operating procedures?
 - (a) To provide a historical record of past operations
 - (b) To satisfy regulatory requirements
 - (c) To ensure consistent and safe operation of the process
 - (d) To track employee performance

5. What is the primary objective of a Management of Change (MOC) process?
 - (a) To reduce costs associated with equipment maintenance
 - (b) To ensure that changes to a process are implemented safely and do not introduce new hazards
 - (c) To improve the efficiency of the process
 - (d) To comply with environmental regulations

6. Which type of audit assesses a company's adherence to regulations, standards, and internal procedures?
 - (a) Financial Audit
 - (b) Quality Audit
 - (c) Compliance Audit
 - (d) Safety Audit

7. In incident investigation, what method involves collecting information through interviews and observations to determine the sequence of events leading to an incident?
 - (a) Incident Investigation Report
 - (b) Investigation Questionnaire
 - (c) Root Cause Analysis
 - (d) Fact-Finding

8. Why might a company invoke the “trade secrets” provision in the context of process safety?
 - (a) To avoid sharing proprietary information with competitors
 - (b) To protect confidential employee data
 - (c) To prevent public disclosure of sensitive financial information
 - (d) To limit liability in the event of an incident

9. Which document outlines the responsibilities of both the principle employer and contractor employer in ensuring safety during contracted work?
 - (a) Hot Work Permit
 - (b) Contractor Agreement
 - (c) Safety Data Sheet (SDS)
 - (d) Emergency Response Plan

10. What is the key objective of emergency planning and response in process safety?
 - (a) To minimize financial losses in the event of an incident
 - (b) To protect the reputation of the company
 - (c) To ensure compliance with regulatory requirements
 - (d) To protect human life, the environment, and property

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What is “inherently safer design’ (ISD)? Explain its principles and how it reduces hazards.

Or

- (b) Explain how understanding process chemistry helps develop effective safety measures.

12. (a) What is the role of design codes and standards in process safety?

Or

- (b) Discuss the importance of safety systems (BPCS, SIS, ESD) in process safety.

13. (a) Explain ‘Management of Change” (MOC) and its role in process safety. Describe the steps involved.

Or

- (b) What is a “Pre-Startup Safety Review” (PSSR)? Discuss its objectives and key elements.

14. (a) Explain “root cause analysis” in incident investigation. Discuss different methods (e.g., 5 Whys, fishbone diagrams).

Or

- (b) Describe the process of conducting an incident investigation. What are the key steps, from response to reporting?

15. (a) Discuss “Life Cycle Assessment” (LCA) and its use in assessing environmental impacts of a process.

Or

- (b) Explain “inherently safer processes” and strategies to achieve them.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Critically evaluate the role of process safety information (PSI) in preventing major accidents. What types of PSI are needed, and how can they be used?

Or

- (b) Discuss challenges and strategies for managing safety in complex and highly integrated process facilities.

17. (a) Explain “safety culture” and its importance in a Process Safety Management (PSM) program. What are its characteristics, and how can it be fostered?

Or

- (b) Discuss the ethical considerations in process safety management. How can organizations balance profitability with the responsibility to protect people and the environment?

18. (a) Explain risk-based inspection (RBI) and how it optimizes inspection and maintenance activities. What are its benefits and challenges?

Or

- (b) Discuss the concept of “inherently safer operations” How can organizations design and operate processes to reduce accident likelihood and severity?

19. (a) Explain “process safety metrics.” Describe different types (leading, lagging) and their use in monitoring and improving safety performance.

Or

- (b) Discuss challenges and strategies for ensuring the mechanical integrity of aging process equipment.
20. (a) Describe different types of emergency response drills and exercises in a process facility. Explain their purpose and how they improve response effectiveness.

Or

- (b) Discuss the importance of communication and coordination during an emergency response. How can organizations ensure seamless communication, and what challenges might they face?
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C-6868

Sub. Code

30724

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025.

Second Semester

Environment and Industrial Safety

**OCCUPATIONAL HEALTH AND SAFETY
MANAGEMENT**

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. Which of the following is NOT a notifiable occupational disease?
 - (a) Siderosis
 - (b) Influenza
 - (c) Anthrax
 - (d) Asbestosis

2. The TLV (Threshold Limit Value) of a chemical substance refers to:
 - (a) Its boiling point
 - (b) The maximum safe concentration in the workplace
 - (c) Its molecular weight
 - (d) Its flammability

3. Whole-body vibration is most likely to cause which health issue?
 - (a) Hearing loss
 - (b) Heat exhaustion
 - (c) Skin burns
 - (d) Back pain

4. The WBGT (Wet Bulb Globe Temperature) index is used to assess:
- (a) Noise levels
 - (b) Air pollution
 - (c) Heat stress
 - (d) Radiation exposure
5. What is the primary purpose of the recovery position in first aid?
- (a) To stop bleeding
 - (b) To maintain a clear airway
 - (c) To stabilize a broken bone
 - (d) To reduce pain
6. In first aid, the acronym CPR stands for:
- (a) Cardiopulmonary Resuscitation
 - (b) Chest Pain Relief
 - (c) Critical patient Response
 - (d) Cardiac pressure Reduction
7. Which of the following is a sign of shock?
- (a) High blood pressure
 - (b) Slow heart rate
 - (c) Warm, dry skin
 - (d) Rapid, shallow breathing

8. The 'rule of nines' is used in first aid to estimate
- (a) The depth of a wound
 - (b) The extent of a burn
 - (c) The severity of a fracture
 - (d) The degree of shock
9. Eustress is a type of stress that is:
- (a) Always harmful
 - (b) Potentially beneficial
 - (c) Caused by lack of sleep
 - (d) A symptom of depression
10. Which of the following is NOT a responsibility of employers in managing workplace stress?
- (a) Providing a safe work environment
 - (b) Offering stress management training
 - (c) Diagnosing employees with stress related disorders
 - (d) Promoting work-life balance

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Define occupational health and explain its significance in preventing work related diseases.

Or

- (b) Define notifiable occupational diseases. Discuss the causes, symptoms and preventive measures for silicosis.

12. (a) What is thermal stress? Explain heat exhaustion and heat stroke, and how the WBGT index can help prevent them.

Or

- (b) Define good illumination. Explain its benefits in the workplace and list the factors influencing lighting design.
13. (a) Describe the first aider's initial actions at an accident scene, emphasizing the assessment of vital signs and the importance of basic anatomy knowledge.

Or

- (b) What is fainting? Explain its management and how to differentiate between hypoglycemia and hyperglycemia in a diabetic emergency.
14. (a) Why is CPR essential in cardiac emergencies? Briefly describe the steps of performing CPR on an adult.

Or

- (b) How are wounds classified? Explain how to manage different types of wounds in a first aid setting.
15. (a) Discuss the concept of behaviour-based safety and its application in promoting a safe work environment.

Or

- (b) What are the responsibilities of employers and employees in creating a mentally healthy workplace?

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) What is industrial toxicology? Explain the different types of toxic effects and the role of Threshold limit Values (TLVs).

Or

- (b) Describe common workplace radiation hazards and their potential health effects. Discuss preventive measures to mitigate these risks.
17. (a) Explain vibration and its measurement. Discuss types of vibration, health effects, and control methods in the workplace.

Or

- (b) What is the importance of ventilation in the workplace? Explain different ventilation systems and the factors influencing ventilation requirements.
18. (a) Describe the musculoskeletal system and explain how biomechanics can help in providing effective first aid for related injuries.

Or

- (b) Discuss the recognition, management and aftercare of head injuries, including skull fractures. Explain how to assess severity and provide appropriate first aid.
19. (a) Explain the concept of shock, its causes, types, signs, symptoms and first aid management.

Or

- (b) Discuss different types of burns, the 'rule of nines,' and the appropriate first aid measures each type.

20. (a) Discuss the concept of 'job satisfaction' and its importance in the context of industrial psychology.

Or

- (b) Explain the role of psychological counseling in addressing mental health issues in the workplace.
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C-6869

Sub. Code

30725

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025.

Second Semester

Environment And Industrial Safety

**HAZARD IDENTIFICATION, RISK ASSESSMENT AND
RISK CONTROL**

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. Which of the following best defines a “hazard”?
 - (a) The likelihood of an event occurring
 - (b) A potential source of harm or adverse health effects
 - (c) The severity of potential consequences
 - (d) A measure taken to reduce the risk of an event

2. The ALARP principle in risk assessment aims to:
 - (a) Eliminate all risks completely
 - (b) Reduce risks to the lowest possible level, regardless of cost
 - (c) Reduce risks to a level that is as low as reasonably practicable
 - (d) Transfer all risks to a third party

3. Which risk analysis method focuses on identifying the sequence of events that could lead to an accident?
 - (a) Root Cause Analysis (RCA)
 - (b) Job Safety Analysis (JSA)
 - (c) Event Tree Analysis (ETA)
 - (d) Failure Mode and Effects Analysis (FMEA)

4. What is the primary purpose of Risk-Benefit Analysis (RBA)?
 - (a) To determine the financial cost of an accident
 - (b) To assess the overall impact of a hazard on the environment
 - (c) To weigh the potential benefits of an activity against its associated risks
 - (d) To identify all possible hazards in a workplace

5. Which safety management tool involves a systematic examination of a process or operation to identify and assess potential hazards?
 - (a) Fault Tree Analysis (FTA)
 - (b) Hazard and Operability Study (HAZOP)
 - (c) Event Tree Analysis (ETA)
 - (d) Failure Mode and Effects Analysis (FMEA)

6. The Risk Priority Number (RPN) in FMEA is calculated by:
 - (a) $\text{Severity} \times \text{Occurrence} \times \text{Detection}$
 - (b) $\text{Severity} + \text{Occurrence} + \text{Detection}$
 - (c) $(\text{Severity} + \text{Occurrence}) / \text{Detection}$
 - (d) $\text{Severity} / (\text{Occurrence} \times \text{Detection})$

7. What is the main purpose of a Risk Matrix in risk assessment?
- (a) To calculate the financial cost of an accident
 - (b) To identify all potential hazards in a workplace
 - (c) To assess and prioritize risks based on their likelihood and severity
 - (d) To develop a detailed emergency response plan
8. Which type of risk assessment relies primarily on expert judgment and experience?
- (a) Quantitative Risk Assessment
 - (b) Semi-Quantitative Risk Assessment
 - (c) Qualitative Risk Assessment
 - (d) Probabilistic Risk Assessment
9. Which chemical accident involved a major release of dioxin, leading to long-term health effects and environmental contamination?
- (a) Bhopal disaster
 - (b) Seveso disaster
 - (c) Flixborough disaster
 - (d) Pasadena disaster
10. The Mexico City disaster of 1984 involved a catastrophic explosion at a:
- (a) Nuclear power plant
 - (b) Oil refinery
 - (c) Chemical storage facility
 - (d) Liquefied petroleum gas (LPG) terminal

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What is ALARP? Explain its significance in risk management and how it differs from the goal of absolute safety.

Or

- (b) How does human error contribute to workplace hazards? Provide two examples and suggest preventive measures.
12. (a) Outline the steps involved in the risk analysis process. How does Root Cause Analysis (RCA) help identify and address underlying causes of incidents?

Or

- (b) Compare and contrast risk-benefit and cost-benefit analysis. In which situations is each type of analysis most applicable?
13. (a) Explain the HAZOP (Hazard and Operability Study) methodology. How does it aid in identifying potential hazards and operational issues?

Or

- (b) Define Fault Tree Analysis (FTA) and briefly describe with an example.
14. (a) Describe the steps in a Hazard Identification and Risk Assessment (HIRA). What is the purpose of a Risk Matrix in risk assessment?

Or

- (b) Differentiate between quantitative and qualitative risk assessments. Give examples of situations where each is most suitable.

15. (a) Analyze the Bhopal disaster from the perspective of hazard and consequence analysis. What lessons can be learned to prevent similar incidents?

Or

- (b) Discuss the importance of past accident analysis for risk assessment. How can learnings from previous incidents improve current safety practices?

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) What is a risk register? Describe its structure, content, and how it's used for effective risk management.

Or

- (b) Define 'hazard characterization'. Explain how factors like nature, impact, and likelihood of occurrence are considered in this process.

17. (a) What is Job Safety Analysis (JSA)? Discuss its steps and how it helps identify hazards and implement control measures for worker safety.

Or

- (b) Explain why "horseplay" is a workplace hazard. What measures can organizations take to discourage it and mitigate risks?

18. (a) Outline the steps involved in conducting an FMEA. Explain the concept of Risk Priority Number (RPN) and its significance in prioritizing corrective actions.

Or

- (b) Describe the Event Tree Analysis (ETA) technique. How does it help in evaluating the potential consequences of initiating events?

19. (a) Explain the concept of Specific Site Assessment. What are its unique considerations, and how does it differ from a generic risk assessment?

Or

- (b) Explain the concept of a Risk Matrix. How is it constructed, what does it convey, and how is it used to prioritize risks based on likelihood and impact?
20. (a) Analyze the Flixborough disaster, discussing its causes, consequences, and lessons learned. How did it influence safety regulations and risk management in the chemical industry?

Or

- (b) Discuss the Seveso disaster and its impact on environmental safety regulations. What were the key findings and how did it influence safety protocols for handling hazardous substances?
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C-6870

Sub. Code

30726A

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025

Second Semester

Environment and Industrial Safety

TEXTILE SAFETY

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. In long staple spinning, which process involves aligning and straightening fibers?
 - (a) Opening
 - (b) Carding
 - (c) Drawing
 - (d) Combing

2. Which of the following is a synthetic fiber?
 - (a) Cotton
 - (b) Wool
 - (c) Silk
 - (d) Polyester

3. What is the primary hazard associated with the transport of hot size in a sizing process?
 - (a) Inhalation of fumes
 - (b) Electrical shock
 - (c) Burns
 - (d) Cuts

4. Which type of knitting machine produces a tubular fabric?
 - (a) Warp knitting machine
 - (b) Weft knitting machine
 - (c) Circular knitting machine
 - (d) Flat knitting machine

5. Which process is used to improve the whiteness of fabrics?
 - (a) Scouring
 - (b) Bleaching
 - (c) Dyeing
 - (d) Finishing

6. Which finishing operation involves raising the surface fibers of a fabric to create a soft, fuzzy texture?
 - (a) Calendering
 - (b) Napping
 - (c) Shearing
 - (d) Singeing

7. Exposure to which of the following can cause noise-induced hearing loss (NIHL) in textile workers?
 - (a) High levels of dust
 - (b) High levels of humidity
 - (c) High levels of heat
 - (d) High levels of noise

8. Which type of PPE protects the respiratory system from inhaling harmful dust and fibers?
- (a) Gloves
 - (b) Earplugs
 - (c) Respirator
 - (d) Safety shoes
9. Which Act in India regulates working conditions and safety in factories, including textile mills?
- (a) The Environmental Protection Act
 - (b) The Factories Act
 - (c) The Consumer Protection Act
 - (d) The Industrial Disputes Act
10. What is the term for the liquid waste generated from textile processes?
- (a) Leachate
 - (b) Sludge
 - (c) Effluent
 - (d) Run-off

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Compare and contrast short staple and long staple spinning, highlighting their impact on fiber selection and yarn properties.

Or

(b) Describe the process of jute spinning and fabric manufacturing, mentioning specific hazards and mitigation strategies

12. (a) Explain what “non-wovens” are, how they are produced, and their common applications in textiles.

Or

(b) Discuss accident hazards related to knitting machines, potential injuries, and safety precautions.

13. (a) Describe the different effluent streams in textile production and their potential environmental impacts if untreated.

Or

(b) Explain mechanical finishing operations in textiles, associated hazards, and control measures.

14. (a) Define “occupational disease.” Discuss two common examples in the textile industry, their causes, symptoms, and prevention

Or

(b) Explain the importance of personal protective equipment (PPE) in textiles. Describe different types and their specific functions in various processes.

15. (a) Discuss the provisions of the Factories Act and Rules relevant to worker safety and welfare in the Indian textile industry

Or

(b) Explain waste disposal in textiles. What are different methods, and how can they be made more sustainable?

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Outline the process flow chart for manufacturing rayon and synthetic fibers, highlighting safety precautions at each stage.

Or

- (b) Discuss accident hazards and safety precautions in opening, drawing, and carding processes in textile manufacturing.

17. (a) Describe hazards in loom sheds (shuttle and shuttleless). How can design, maintenance, and training contribute to safety?

Or

- (b) Explain scouring, bleaching, dyeing, and printing processes in detail, including specific hazards (chemical, fire, ergonomic) for each

18. (a) What are the health hazards of dust, fly, and noise in textiles? Discuss control measures to reduce exposure and prevent health issues.

Or

- (b) Discuss specific health and welfare measures in the textile industry to prevent occupational diseases and promote well-being. How do ergonomics and workplace design contribute?

19. (a) Explain effluent treatment in the textile industry. Describe various physical, chemical, and biological treatment methods

Or

- (b) Discuss the importance of waste disposal regulations in textiles. How do they minimize environmental impact? What challenges remain for sustainable waste management?

20. (a) Analyze a specific chemical accident (e.g., Bhopal) in textiles. Discuss causes, consequences, and lessons learned, emphasizing hazard identification, risk assessment, and safety management.

Or

- (b) Provide a detailed report on the Feyzin disaster (1966), including causes, events, consequences, and lessons learned regarding LPG storage and handling.
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C-6871

Sub. Code

30726B

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025

Second Semester

Environment and Industrial Safety

SAFETY IN MINES

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. What is the primary cause of fires in underground mines?
 - (a) Spontaneous combustion of coal
 - (b) Electrical faults
 - (c) Welding activities
 - (d) All of the above

2. Which of the following is NOT a common type of ground support used in tunneling?
 - (a) Rock bolts
 - (b) Shotcrete
 - (c) Steel ribs
 - (d) Gabions

3. Which type of tunnel is typically used for transportation purposes?
 - (a) Immersed tube tunnel
 - (b) Cut-and-cover tunnel
 - (c) Bored tunnel
 - (d) All of the above

4. Which of the following is a quantitative method for risk assessment?
- (a) Fault tree analysis
 - (b) Failure mode and effects analysis
 - (c) Hazard and operability study
 - (d) Cost-benefit analysis
5. What is the term for the rate at which accidents occur in a mine, typically expressed as the number of accidents per million man-hours worked?
- (a) Severity rate
 - (b) Frequency rate
 - (c) Incident rate
 - (d) Lost time injury rate
6. In opencast mines, which of the following poses the greatest risk of fire?
- (a) Water pumps
 - (b) Electrical systems
 - (c) Hand tools
 - (d) Belt conveyors
7. What is the term for the sudden collapse of the roof or walls of a mine?
- (a) Subsidence
 - (b) Inrush
 - (c) Fall of ground
 - (d) Rockburst
8. Which type of tunnel lining is best suited for soft ground conditions?
- (a) Concrete lining
 - (b) Steel ribs
 - (c) Precast concrete segments
 - (d) Shotcrete

9. Which risk assessment technique focuses on identifying potential failure modes and their effects?
- (a) Fault tree analysis
 - (b) Failure mode and effects analysis
 - (c) Hazard and operability study
 - (d) Risk matrix
10. What is the primary goal of emergency preparedness in mines?
- (a) To minimize casualties and damage
 - (b) To evacuate all personnel
 - (c) To notify authorities
 - (d) To investigate the cause of the emergency

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the hazards of drilling in opencast mines and the safety measures to mitigate risks.

Or

- (b) Discuss the importance of safe transportation of materials and personnel in opencast mines.

12. (a) Explain water flooding in underground mines, associated risks and prevention/management strategies.

Or

- (b) Describe working conditions in underground mines, challenges faced by workers, and how to improve them for safety and well-being.

13. (a) Discuss the risks of falls from platforms and falling objects in tunneling, and safety measures to protect workers.

Or

- (b) Explain the hazards of atmospheric pollution (gases and dusts) in tunnels and how ventilation and monitoring mitigate risks.
14. (a) Describe QSAR analysis in risk assessment. How can QSAR models predict the potential hazards of chemicals?

Or

- (b) Explain fuzzy logic in risk assessment. How can fuzzy models be applied to handle uncertainties and complexities in mining and tunneling risk assessment?
15. (a) Discuss accident frequency rates in mine safety, their calculation, and what they indicate about safety performance.

Or

- (b) Explain the importance of accident investigation in mine safety, key steps involved, and how findings can prevent future occurrences.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Provide an overview of safety measures for handling explosives in opencast mines, including storage, transportation, procedures and emergency response.

Or

- (b) Explain the importance of working conditions in opencast mines for worker safety, discussing factors like heat stress, fatigue, ergonomics, and amenities.
17. (a) Discuss the causes and consequences of roof and side falls in underground mines, describing ground support systems and techniques for prevention.

Or

- (b) Explain winding and transportation in underground mines, highlighting safety considerations for hoisting systems, conveyance design and operational procedures.
18. (a) Describe different ground conditions in tunneling projects (soft ground, rock, mixed face) and how they influence tunneling methods and risks.

Or

- (b) Discuss electrical hazards in tunneling and how proper grounding, insulation and safety practices mitigate risks.

19. (a) Explain Fault Tree Analysis (FTA) in detail, describing the steps in constructing and analyzing a fault tree to identify critical failure points in a system.

Or

- (b) Discuss Failure Mode and Effects Analysis (FMEA), explaining how it identifies failure modes, assesses severity and prioritizes corrective actions for system reliability.
20. (a) Analyze a recent tunneling project that faced challenges, discussing the causes, measures taken and lessons learned.

Or

- (b) Explain the “cost of accidents” in mining, discussing direct and indirect costs and how effective safety management can reduce them.
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C-6872

Sub. Code

30726C

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025

Second Semester

Environment and Industrial Safety

TRANSPORT SAFETY

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. What is the primary purpose of a speed governor on a vehicle transporting hazardous goods?
 - (a) To reduce fuel consumption
 - (b) To prevent exceeding the speed limit
 - (c) To monitor driver fatigue
 - (d) To track the vehicle's location

2. Which of the following is NOT a common type of driver training for transporting hazardous goods?
 - (a) Defensive driving
 - (b) Hazard communication
 - (c) Emergency response
 - (d) Vehicle maintenance

3. What is the main purpose of a “reconnaissance survey” in road alignment?
 - (a) To assess the environmental impact of the road
 - (b) To gather preliminary data about the terrain and potential route
 - (c) To determine the final design of the road
 - (d) To negotiate land acquisition with property owners

4. What is the term for the distance a driver can see ahead on a road to make safe decisions?
 - (a) Stopping sight distance
 - (b) Overtaking sight distance
 - (c) Sight distance
 - (d) Decision sight distance

5. What is the primary function of a “grease rack” in a repair shop?
 - (a) To store used oil and grease
 - (b) To lift vehicles for maintenance and repair work
 - (c) To clean vehicle exteriors
 - (d) To charge vehicle batteries

6. Which of the following is a hazard associated with battery charging in a repair shop?
 - (a) Fire
 - (b) Explosion
 - (c) Hydrogen gas release
 - (d) All of the above

7. What does the term “tacho-graph” refer to in the context of driver safety?
- (a) A device that measures a vehicle’s speed
 - (b) A device that records a driver’s working hours and rest breaks
 - (c) A device that monitors a driver’s heart rate
 - (d) A device that tracks a vehicle’s location
8. Which of the following is NOT a safe driving incentive?
- (a) Bonus pay for accident-free driving
 - (b) Recognition awards for safe drivers
 - (c) Increased insurance premiums for drivers with accidents
 - (d) Training programs to improve driving skills
9. What does the term “tractive resistance” mean in road transportation?
- (a) The force required to move a vehicle on a level road
 - (b) The force that opposes the motion of a vehicle
 - (c) The force required to accelerate a vehicle
 - (d) The force required to stop a vehicle
10. What is the purpose of a “wash rack booth” in a repair shop?
- (a) To store cleaning supplies
 - (b) To provide a designated area for washing vehicles
 - (c) To collect and treat wastewater from washing
 - (d) To protect workers from the elements while washing vehicles

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What are warning symbols on hazardous goods vehicles and why are they important? Give examples.

Or

- (b) Explain “decanting” in hazardous goods transportation and its safety measures.

12. (a) How does motor truck design impact road safety? Discuss factors like visibility and braking.

Or

- (b) What are motor vehicle surveys and how do they ensure vehicle roadworthiness and safety?

13. (a) Why are driver rest pauses important? How often should they be taken and what activities are recommended?

Or

- (b) Explain “fleet accident frequency” and its importance as a metric for transportation companies.

14. (a) What is the “ruling gradient” in road design and how does it influence route selection?

Or

- (b) Explain the concept of vehicle “skidding,” contributing factors and how drivers can avoid it.

15. (a) Describe safety practices for operating motorized equipment off the road, such as forklifts.

Or

- (b) Discuss safety considerations for servicing and maintaining heavy machinery in repair shops.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Detail the loading and unloading procedures for hazardous goods, emphasizing safety precautions to prevent spills and leaks.

Or

- (b) What are the responsibilities of a hazardous goods driver? Discuss their role in ensuring safe delivery, including inspections and emergency response.

17. (a) Discuss the selection and training process for drivers in the transportation industry, highlighting key criteria and training programs.

Or

- (b) Explain “safe driving incentives” and how they encourage safe practices. What types of incentives can be used and how is their effectiveness measured?

18. (a) Discuss emergency planning for hazardous materials transportation, detailing steps for preparation and response to potential incidents.

Or

- (b) Explain the purpose of Hazmat codes and how they aid in the safe handling, storage and transportation of dangerous goods.

19. (a) Discuss the concept of “breaking characteristics” of vehicles and its impact on road safety, including stopping distances.

Or

- (b) Explain how pavement conditions (surface type, texture, etc.) affect vehicle traction, braking and overall safety.

20. (a) Describe safe practices for working with cranes on shop floors, discussing hazards like overloading and measures to prevent them.

Or

- (b) Explain the importance of safety in manual handling operations in shops, discussing proper lifting, ergonomics and using mechanical aids.

C-6873

Sub. Code

30727

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025

Second Semester

Environment and Industrial Safety

PERSONALITY DEVELOPMENT

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. Which of the following can be a barrier to effective communication?
 - (a) Clear articulation
 - (b) Active listening
 - (c) Cultural differences
 - (d) Empathy

2. Which of the following is a key component of emotional intelligence?
 - (a) Self-awareness
 - (b) Impulsiveness
 - (c) Arrogance
 - (d) Indifference

3. Which of these is a technique used to enhance creativity?
 - (a) Brainstorming
 - (b) Rigid adherence to routine
 - (c) Fear of failure
 - (d) Negative self-talk

4. Which is a characteristic of effective time management?
 - (a) Prioritization
 - (b) Procrastination
 - (c) Disorganization
 - (d) Multitasking without focus

5. Which leadership style empowers team members and encourages participation?
 - (a) Autocratic
 - (b) Democratic
 - (c) Laissez-faire
 - (d) Transactional

6. What is a crucial element for interview success?
 - (a) Honesty and authenticity
 - (b) Negativity towards previous employers
 - (c) Lack of preparation
 - (d) Overstating qualifications

7. A professional resume should:
 - (a) Highlight relevant skills and experience
 - (b) Be excessively long
 - (c) Include irrelevant personal details
 - (d) Be generic and untailored

8. Which is important regarding professional attire?
 - (a) Appropriateness for the industry and company
 - (b) Comfort regardless of context
 - (c) Ignoring grooming standards
 - (d) Following trends regardless of suitability

9. What is a potential benefit of group discussions?
 - (a) Gaining diverse perspectives
 - (b) Reinforcing personal biases
 - (c) Avoiding differing viewpoints
 - (d) Becoming less tolerant

10. Which of the following is a characteristic of an effective listener?
- (a) Interrupting frequently
 - (b) Paying attention and showing engagement
 - (c) Formulating a response while the speaker is still talking
 - (d) Being easily distracted

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the importance of listening in effective communication.

Or

- (b) Discuss the various barriers to listening and how they can be overcome.

12. (a) Define Emotional Intelligence and explain its significance in professional life.

Or

- (b) What are emotional competencies? How do they contribute to workplace success?

13. (a) Explain the importance of time management in professional success.

Or

- (b) Discuss the different types of leadership styles with examples.

14. (a) Describe the steps to prepare effectively for an interview.

Or

- (b) What are illegal interview questions? Provide examples.

15. (a) Explain the importance of grooming and personal appearance in the workplace.

Or

- (b) Discuss the role of soft skills in career development.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Explain the process of goal setting and its role in personal and professional development.

Or

- (b) Describe the 10 blocks that affect creativity and how they can be overcome.

17. (a) Discuss the seven rules of motivation and their impact on leadership.

Or

- (b) What are the top 10 leadership qualities? Explain with examples.

18. (a) Explain the concept of follow-up in job interviews and describe the three steps to effective follow-up.

Or

- (b) Describe the ten rules of interviewing and how they help candidates succeed.

19. (a) Explain how group discussions are conducted and evaluated during job selection.

Or

- (b) Discuss the significance of presentation skills in professional settings.

20. (a) What is the importance of training and certification in career growth?

Or

- (b) Explain the key components of an effective resume and job application.

C-6874

Sub. Code

30731

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025

Third Semester

Environment and Industrial Safety

SAFETY INSPECTION AND AUDIT

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. What is the primary purpose of a workplace inspection?
 - (a) To identify potential hazards and unsafe conditions
 - (b) To evaluate employee performance
 - (c) To assess the financial health of the company
 - (d) To comply with legal requirements

2. Which of the following is NOT typically included in a workplace inspection report?
 - (a) Date and time of inspection
 - (b) Names of inspection team members
 - (c) Employee salaries
 - (d) Observations of hazards

3. What is the main difference between a safety inspection and a safety audit?
 - (a) Inspections are more frequent than audits
 - (b) Audits are more in-depth and comprehensive than inspections
 - (c) Inspections are conducted by external parties, while audits are internal
 - (d) There is no difference between inspections and audits

4. Which of the following is a type of safety audit?
 - (a) Compliance audit
 - (b) System audit
 - (c) Management audit
 - (d) All of the above

5. ISO 45001 is an international standard for :
 - (a) Environmental management systems
 - (b) Quality management systems
 - (c) Occupational health and safety management systems
 - (d) Risk management systems

6. The “Plan-Do-Check-Act’ (PDCA) cycle is a model for :
 - (a) Conducting incident investigations
 - (b) Implementing corrective actions
 - (c) Continuous improvement
 - (d) Risk assessment

7. ISO 14001 focuses on :
- (a) Occupational health and safety
 - (b) Environmental management systems
 - (c) Quality management systems
 - (d) Financial management systems
8. What does LCA stand for in the context of ISO 14000?
- (a) Life Cycle Assessment
 - (b) Loss Control Analysis
 - (c) Legal Compliance Audit
 - (d) Leadership and Commitment Assessment
9. Eco-labeling is intended to :
- (a) Promote environmentally friendly products
 - (b) Reduce waste generation
 - (c) Improve product quality
 - (d) Increase profits
10. EIA stands for :
- (a) Environmental Impact Assessment
 - (b) Emergency Incident Analysis
 - (c) Employee Injury Assessment
 - (d) Equipment Inspection Audit

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the importance of planning and conducting regular workplace inspections.

Or

- (b) Describe the information that should be included in a comprehensive workplace inspection report.

12. (a) Discuss the different types of safety audits and their objectives.

Or

- (b) Explain the methodology for conducting a safety audit, including pre-audit and post-audit activities.

13. (a) Describe the key elements of an Occupational Health and Safety Management System (OHSMS) according to ISO 45001.

Or

- (b) Explain the importance of leadership and worker participation in implementing an effective OHSMS.

14. (a) Discuss the objectives and principles of an Environmental Management System (EMS) according to ISO 14001.

Or

- (b) Explain the documentation requirements for an ISO 14001-based EMS.

15. (a) Describe the stages involved in a Life Cycle Assessment (LCA) according to ISO 14040.

Or

- (b) Explain the concept of eco-labeling and its different types according to ISO 14020.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Discuss the importance of follow-up and monitoring after a workplace inspection to ensure that corrective actions are implemented effectively.

Or

- (b) Explain the role of safety inspections in identifying and controlling hazards, preventing accidents, and promoting a safe work environment.

17. (a) Describe the process of conducting a comprehensive safety audit, including pre-audit planning, on-site activities, data collection, and reporting.

Or

- (b) Discuss the benefits of conducting safety audits, such as identifying strengths and weaknesses, improving safety performance, and reducing risks.

18. (a) Explain the concept of the “Plan-Do-Check-Act” (PDCA) cycle and its application in continuously improving an OHSMS.

Or

- (b) Discuss the role of leadership commitment and worker involvement in creating a strong safety culture and ensuring the success of an OHSMS.

19. (a) Explain the steps involved in implementing an EMS based on ISO 14001, from establishing an environmental policy to conducting management reviews.

Or

- (b) Discuss the benefits of implementing an EMS, such as reducing environmental impact, improving compliance, and enhancing business reputation.
20. (a) Describe the purpose and methodology of an Environmental Impact Assessment (EIA) and its role in identifying and mitigating potential environmental impacts of projects or activities.

Or

- (b) Discuss the relationship between EIA and EMS, and how EIA findings can be integrated into an organization's environmental management system.
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C-6875

Sub. Code

30732

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025

Third Semester

Environment and industrial Safety

INDUSTRIAL HYGIENE AND TOXICOLOGY

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. Which system is responsible for breaking down food and absorbing nutrients?
 - (a) Digestive system
 - (b) Circulatory system
 - (c) Nervous system
 - (d) Respiratory system

2. The skeleton provides
 - (a) Support and structure for the body
 - (b) Movement
 - (c) Oxygen to the body
 - (d) Filtering of blood

8. Which of the following is a work-related musculoskeletal disorder (WRULD)?
- (a) Asthma (b) Tendonitis
(c) Dermatitis (d) Influenza
9. HVAC systems are associated with
- (a) Noise control
(b) Indoor air quality
(c) Radiation protection
(d) Biological monitoring
10. Audiometry is a test for
- (a) Vision (b) Hearing
(c) Lung function (d) Neurological function

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Describe the functions of the nervous system and its role in controlling body activities.

Or

- (b) Explain the importance of the renal system in filtering waste products from the blood.

12. (a) Discuss the different types of ventilation systems used in industrial workplaces.

Or

- (b) Explain the role of administrative controls and personal protective equipment (PPE) in hazard control.

13. (a) Describe the different routes of entry for toxic substances into the body.

Or

- (b) Explain the concept of metabolism and excretion of toxins.

14. (a) Discuss the risk factors associated with repetitive tasks and their impact on worker health.

Or

- (b) Explain the minimum requirements for workstations according to ergonomic principles.

15. (a) Describe the methods used for sampling and analysing gases and vapours in the workplace.

Or

- (b) Explain the purpose and types of biological monitoring tests used in occupational health.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Explain the structure and function of the human musculoskeletal system, including bones, muscles, tendons, and ligaments.

Or

- (b) Describe the different types of sense organs and their functions in perceiving the environment.

17. (a) Discuss the hazards associated with ionizing and non-ionizing radiation, including their sources, health effects, and control measures.

Or

- (b) Explain the concept of Legionella and humidifier fever and its preventive measures.

18. (a) Discuss the stages of toxicological evaluation and explain the importance of each stage.

Or

- (b) Explain the concept of HAZCHEM codes and their use in emergency response to chemical incidents.

19. (a) Discuss the principles of workplace risk assessment and explain the steps involved in conducting a comprehensive ergonomic risk assessment.

Or

- (b) Explain the concept of “designing the job” and “designing the workplace” in the context of ergonomics.

20. (a) Describe the various health surveillance techniques used to monitor worker health, including medical examinations and lung function tests.

Or

- (b) Discuss the importance of biological monitoring and health surveillance in protecting worker health and preventing occupational diseases.
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C-6876

Sub. Code

30733

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025

Third Semester

Environment and Industrial Safety

SAFETY CULTURE AND BEHAVIOUR BASED SAFETY

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. Which of the following is NOT a personality type according to the Myers-Briggs Type Indicator (MBTI)?
 - (a) Introvert
 - (b) Extrovert
 - (c) Agreeable
 - (d) Neurotic

2. The process of learning through observation and imitation is called:
 - (a) Classical conditioning
 - (b) Operant conditioning
 - (c) Social learning
 - (d) Cognitive learning

3. Which of the following is a characteristic of effective teams?
 - (a) Clear goals
 - (b) Open communication
 - (c) Mutual trust
 - (d) All of the above

4. What is the purpose of 'behaviour-based safety' (BBS)?
 - (a) To punish workers for unsafe behaviour
 - (b) To identify and correct unsafe behaviours
 - (c) To analyse accident statistics
 - (d) To design ergonomic workstations

5. Ergonomics is the study of:
 - (a) Human behaviour in organizations
 - (b) The interaction between humans and their work environment
 - (c) The physical properties of materials
 - (d) The financial performance of companies

6. Which of the following is an ergonomic risk factor?
 - (a) Repetitive motions
 - (b) Awkward postures
 - (c) Heavy lifting
 - (d) All of the above

7. Anthropometry is the study of:
- (a) Human body measurements
 - (b) Human psychology
 - (c) Workplace design
 - (d) Safety regulations
8. ‘Personal space’ refers to:
- (a) The distance individuals prefer to maintain between themselves and others
 - (b) The layout of individual workstations
 - (c) The design of office furniture
 - (d) The allocation of storage space
9. Which of the following is NOT a principle of motion economy?
- (a) Reduce unnecessary movements
 - (b) Use both hands simultaneously
 - (c) Maximize reaching and stretching
 - (d) Use momentum to assist movements
10. Fatigue can lead to:
- (a) Increased productivity
 - (b) Improved decision-making
 - (c) Reduced alertness and increased errors
 - (d) Enhanced communication

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the factors that influence personality development.

Or

- (b) Describe the different types of learners and their characteristics.

12. (a) Discuss the stages of group formation and development.

Or

- (b) Explain the importance of communication and control in group dynamics.

13. (a) Describe the ABC model of behaviour change and its application in behaviour-based safety.

Or

- (b) Explain the role of safety coaching and feedback in promoting safe behaviours.

14. (a) Discuss the ergonomic considerations for designing work benches and seating arrangements.

Or

- (b) Explain the principles of motion economy and their application in improving work efficiency and reducing fatigue.

15. (a) Describe the anthropometric factors that should be considered when designing workstations for standing and seated work.

Or

- (b) Explain the importance of considering personal space in workplace design.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Discuss the various theories of motivation and their implications for managing employee performance.

Or

- (b) Explain the importance of perception and interpersonal perception in the workplace.

17. (a) Describe the different group decision-making techniques and their advantages and disadvantages.

Or

- (b) Discuss the challenges of managing informal groups and leaders in organizations.

18. (a) Explain how to integrate behavioural safety principles into other management systems, such as quality management or environmental management systems.

Or

- (b) Discuss the impact of safety culture on behaviour-based safety programs.

19. (a) Discuss the application of ergonomic principles in the design of electrical panels and switchgears.

Or

- (b) Explain the physiological effects of fatigue and how it can contribute to workplace accidents.
20. (a) Describe the ergonomic guidelines for designing work surfaces for both static and dynamic tasks.

Or

- (b) Discuss the relationship between effectiveness, cost-effectiveness and ergonomics in workplace design.
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C-6877

Sub. Code

30734

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025

Third Semester

Environment and Industrial Safety

SAFETY IN OIL AND GAS INDUSTRIES

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. What is the primary focus of safety management in the oil and gas industry?
 - (a) Protecting profits
 - (b) Preventing accidents and injuries
 - (c) Minimizing environmental impact
 - (d) All of the above

2. Which of the following is a common cause of accidents in the oil and gas industry?
 - (a) Struck-by hazards
 - (b) Falls from height
 - (c) Fires and explosions
 - (d) All of the above

3. Root Cause Analysis (RCA) is a process used to:
 - (a) Assign blame for accidents
 - (b) Identify the underlying causes of accidents
 - (c) Calculate the cost of accidents
 - (d) Develop emergency response plans

4. A Job Safety Analysis (JSA) involves:
 - (a) Breaking down a task into steps and identifying hazards
 - (b) Analyzing past accidents
 - (c) Conducting safety training
 - (d) Performing equipment inspections

5. Which agency plays a significant role in regulating offshore safety in many countries?
 - (a) International Maritime Organization (IMO)
 - (b) World Health Organization (WHO)
 - (c) International Labour Organization (ILO)
 - (d) United Nations Environment Programme (UNEP)

6. What is the purpose of an accident investigation?
 - (a) To punish those responsible
 - (b) To prevent similar accidents from happening again
 - (c) To gather evidence for legal proceedings
 - (d) To determine insurance payouts

7. Which of the following is NOT a common hazard in the oil and gas industry?
- (a) Working at height
 - (b) Exposure to radiation
 - (c) Confined spaces
 - (d) Handling hazardous materials
8. A work permit system is used to:
- (a) Control access to hazardous areas
 - (b) Track employee attendance
 - (c) Manage safety training records
 - (d) Monitor environmental emissions
9. What is a key safety precaution for working in a confined space?
- (a) Ensuring adequate ventilation
 - (b) Testing the atmosphere for hazardous gases
 - (c) Using appropriate Personal Protective Equipment (PPE)
 - (d) All of the above
10. Which of the following is a source of accident data in the oil and gas industry?
- (a) Accident reports
 - (b) Near-miss reports
 - (c) Safety audits
 - (d) All of the above

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the safety management principles that are relevant to the oil and gas industry.

Or

- (b) Discuss the different types of hazards encountered in the oil and gas industry and provide examples.

12. (a) Describe the process of conducting a Root Cause Analysis (RCA) and its importance in preventing accidents.

Or

- (b) Explain the purpose and benefits of a Job Safety Analysis (JSA).

13. (a) Discuss the importance of worker situation awareness in maintaining safety in offshore operations.

Or

- (b) Explain the role of safety inspections and audits in ensuring compliance with safety regulations in the offshore oil and gas industry.

14. (a) Describe the individual factors that can influence safety performance in the oil and gas industry.

Or

- (b) Explain the role of group dynamics and teamwork in promoting safety.

15. (a) Discuss the hazards associated with working at height in the oil and gas industry and the control measures to mitigate these hazards.

Or

- (b) Explain the procedures for safely handling hazardous materials in the oil and gas industry.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Discuss the concept of product hazard classification and its importance in managing safety risks in the oil and gas industry.

Or

- (b) Explain the common causes of work-related injuries in the oil and gas industry and discuss strategies for preventing these injuries.

17. (a) Describe the different types of safety analysis methods used in the oil and gas industry, including HAZOP, JSA, and FMEA. Compare and contrast their strengths and weaknesses.

Or

- (b) Explain the concept of reliability analysis and its importance in ensuring the safety and integrity of critical systems in the oil and gas industry.

18. (a) Analyse the causes and consequences of a specific offshore oil and gas industry accident case study (e.g., Piper Alpha, Deepwater Horizon).

Or

- (b) Discuss the importance of accident reporting and investigation in the offshore oil and gas industry and explain the key steps involved in conducting a thorough investigation.

19. (a) Discuss the various factors that contribute to accidents in the oil and gas industry, including human factors, organizational factors, and technical factors.

Or

- (b) Explain the concept of a work permit system and its role in controlling hazards and preventing accidents in the oil and gas industry.
20. (a) Describe the hazards associated with confined spaces in the oil and gas industry and explain the safety precautions and procedures for working in these environments. OR

Or

- (b) Discuss the importance of accident data analysis in identifying trends, patterns, and root causes of accidents in the oil and gas industry.
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C-6878

Sub. Code

30735

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025

Third Semester

Environment and Industrial Safety

**SAFETY ASPECTS IN INDUSTRIAL PLANT LAYOUT
DESIGN**

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. What is the primary purpose of plant layout design?
 - (a) To maximize aesthetic appeal
 - (b) To optimize workflow and efficiency
 - (c) To minimize construction costs
 - (d) To comply with building codes

2. Which of the following is a crucial safety consideration in plant layout design?
 - (a) Safe distances between equipment
 - (b) Location of fire hydrants and fire service rooms
 - (c) Provisions for effluent disposal and treatment
 - (d) All of the above

3. What is a territorial parameter to consider when selecting a plant location?
 - (a) Availability of skilled labor
 - (b) Proximity to transportation networks
 - (c) Environmental regulations
 - (d) All of the above

4. NDT stands for:
 - (a) Non-destructive testing
 - (b) New design technology
 - (c) National development team
 - (d) Net design template

5. Which of the following is a computerized layout planning tool?
 - (a) ALDEP
 - (b) HAZOP
 - (c) SWOT analysis
 - (d) Pareto chart

6. JIT (Just-In-Time) is a manufacturing strategy that focuses on:
 - (a) Maximizing inventory levels
 - (b) Minimizing waste and improving efficiency
 - (c) Increasing production lead times
 - (d) Reducing customer satisfaction

7. What is the purpose of local exhaust ventilation?
 - (a) To provide fresh air to the entire workspace
 - (b) To remove contaminants at their source
 - (c) To control temperature and humidity
 - (d) To dilute airborne contaminants

8. "5S" is a workplace organization methodology that stands for:
- (a) Sort, Set in order, Shine, Standardize, Sustain
 - (b) Safety, Security, Satisfaction, Sustainability, Success
 - (c) Simplify, Streamline, Standardize, Secure, Succeed
 - (d) None of the above
9. Which of the following is NOT a type of material handling equipment?
- (a) Conveyor
 - (b) Forklift
 - (c) Computer
 - (d) Crane
10. What is a sling used for in material handling?
- (a) Lifting and moving heavy objects
 - (b) Protecting workers from falling objects
 - (c) Guiding the movement of conveyors
 - (d) Cleaning up spills

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the importance of considering safe distances in plant layout design.

Or

- (b) Discuss the safety considerations for plant layout design in chemical plants.

12. (a) Describe the factors to consider when selecting a safe location for storing hazardous chemicals.

Or

- (b) Explain the different Non-Destructive Testing (NDT) methods and their applications in plant inspection.

13. (a) Discuss the advantages and disadvantages of using computerized layout planning tools.

Or

- (b) Explain the concept of “workstation design” and its importance in optimizing material handling and workflow.

14. (a) Describe the principles of good ventilation and explain the different types of ventilation systems used in industrial workplaces.

Or

- (b) Discuss the importance of good housekeeping in maintaining a safe and healthy work

15. (a) Explain the safety precautions for manual handling of materials.

Or

- (b) Discuss the operations and maintenance of conveying equipment.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Discuss the safety considerations for plant layout design in pharmaceutical and food processing.

Or

- (b) Explain the importance of adhering to standards and codes of practice in plant layout design and provide examples of relevant standards.

17. (a) Describe the process of selecting a suitable plant location, including the assessment of territorial parameters environmental factors, and infrastructure availability.

Or

- (b) Discuss the safety considerations for locating and designing storage facilities for hazardous materials like LPG, LNG, CNG, acetylene, ammonia, and chlorine.

18. (a) Explain the different types of facility systems and their role in optimizing material flow and efficiency in manufacturing operations.

Or

- (b) Discuss the concept of facility design and describe the steps involved in the facility design procedure.

19. (a) Discuss the purpose and importance of lighting in the workplace and lighting requirements for various tasks.

Or

- (b) Explain the role of preventive maintenance in ensuring the safety and reliability of equipment and machinery in the workplace.

20. (a) Describe the different types of hoisting mechanisms and explain their safe operation and maintenance procedures.

Or

- (b) Discuss the general considerations for material handling, including the selection of appropriate equipment and safety precautions for preventing injuries and accidents.
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C-6879

Sub. Code

**30736A/
70136A**

M.B.A./M.Sc. DEGREE EXAMINATION, NOVEMBER 2025

Third Semester

SAFETY MANAGEMENT SYSTEM

**(Common for Environment and Industrial
Safety/Industrial Safety and Hygiene)**

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** the questions.

1. The primary goal of safety management is to:
 - (a) Reduce costs
 - (b) Increase productivity
 - (c) Prevent accidents and injuries
 - (d) Improve employee morale

2. Which of the following is NOT a cost associated with accidents?
 - (a) Medical expenses
 - (b) Lost production time
 - (c) Increased sales
 - (d) Damage to equipment

3. A “near miss” incident is:
 - (a) An accident that results in a minor injury
 - (b) An unplanned event that could have resulted in an accident
 - (c) A safety violation that is reported anonymously
 - (d) A successful safety training program

4. Haddon’s principle is a framework for:
 - (a) Analyzing accident causation
 - (b) Conducting risk assessments
 - (c) Developing safety policies
 - (d) Implementing safety training

5. Effective communication in safety involves:
 - (a) Clear and concise messages
 - (b) Multiple channels of communication
 - (c) Feedback mechanisms
 - (d) All of the above

6. Which of the following is a modern method of safety training?
 - (a) E-learning
 - (b) Simulations
 - (c) Virtual reality
 - (d) All of the above

7. Induction training is provided to:
 - (a) New employees
 - (b) Experienced workers
 - (c) Managers and supervisors
 - (d) Visitors and contractors

8. Employee participation in safety can be achieved through:
 - (a) Safety committees
 - (b) Suggestion schemes
 - (c) Safety competitions
 - (d) All of the above

9. "Safety culture" refers to:
 - (a) The shared values and beliefs about safety within an organization
 - (b) The number of safety regulations in place
 - (c) The amount of money spent on safety equipment
 - (d) The frequency of safety inspections

10. Which of the following is a human factor contributing to accidents?
 - (a) Complacency
 - (b) Distraction
 - (c) Fatigue
 - (d) All of the above

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the historical development of safety management in India and abroad.

Or

- (b) Discuss the legal, economic, and social considerations for promoting safety in the workplace.

12. (a) Describe the process of formulating and implementing a safety policy in an organization.

Or

- (b) Explain the functions and responsibilities of a safety department.

13. (a) Discuss the different training methods and strategies used in safety education.

Or

- (b) Explain the importance of evaluating and reviewing safety training programs.

14. (a) Describe the various methods for promoting employee participation in safety.

Or

- (b) Explain the role of trade unions in workplace safety.

15. (a) Discuss the psychological aspects of safety and the factors that influence risk perception.

Or

- (b) Explain the different theories of motivation and their application to safety performance.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Discuss the different theories of accident occurrence and their implications for accident prevention.

Or

- (b) Explain the concept of “near miss” incidents and their importance in proactive safety management.

17. (a) Describe the process of developing and implementing a comprehensive safety plan, including hazard identification, risk assessment and control measures.

Or

- (b) Explain the role of Management by Objectives (MBO) in achieving safety goals.

18. (a) Discuss the various modes of communication used in safety and the barriers to effective communication.

Or

- (b) Explain how to integrate safety into operating procedures and job instructions.

19. (a) Discuss the importance of safety incentive schemes and their potential benefits and drawbacks.

Or

- (b) Explain the different promotional methods used to raise safety awareness and encourage safe behavior.

20. (a) Discuss the concept of safety culture and its impact on organizational safety performance.

Or

- (b) Explain the ethical considerations in safety management and the responsibilities of managers and supervisors in promoting ethical behavior.
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C-6880

Sub. Code

30736C

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025.

Third Semester

Environment and Industrial Safety

DISASTER MANAGEMENT

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. Which of the following is a natural disaster?
 - (a) Terrorism
 - (b) Oil spill
 - (c) Earthquake
 - (d) Gas leak

2. Risk in the context of disaster management is:
 - (a) The probability of a disaster occurring
 - (b) The potential for loss or harm from a disaster
 - (c) The vulnerability of a community to a disaster
 - (d) The ability to cope with a disaster

3. What does “mitigation” mean in disaster management?
 - (a) Responding to a disaster
 - (b) Recovering from a disaster
 - (c) Reducing the impact of a disaster
 - (d) Ignoring the risk of a disaster

4. Which stage of the disaster cycle involves providing immediate assistance to those affected?
 - (a) Prevention
 - (b) Mitigation
 - (c) Response
 - (d) Recovery

5. Which of the following is a principle of disaster management?
 - (a) Preparedness
 - (b) Response
 - (c) Recovery
 - (d) All of the above

6. Early warning systems are designed to:
 - (a) Predict disasters with 100% accuracy
 - (b) Provide timely alerts to enable evacuation and preparedness
 - (c) Control the occurrence of natural disasters
 - (d) Assess the economic impact of disasters

7. Which of the following is a training activity for disaster preparedness?
 - (a) Evacuation drills
 - (b) First aid training
 - (c) Search and rescue exercises
 - (d) All of the above

8. GIS stands for:
 - (a) Global Information System
 - (b) Geographic Information System
 - (c) Geological Information System
 - (d) Governmental Information System

9. Which UN agency is primarily responsible for disaster risk reduction?
- (a) UNDP (b) UNDRR
- (c) WHO (d) UNESCO
10. What is the role of the National Disaster Management Authority (NDMA) in India?
- (a) To coordinate disaster management efforts at the national level
- (b) To provide financial assistance to disaster victims
- (c) To conduct research on disaster mitigation
- (d) All of the above

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the difference between a hazard and a disaster.

Or

- (b) Discuss the concept of vulnerability in the context of disaster management.

12. (a) Describe the different stages of the disaster cycle.

Or

(b) Explain the importance of resilience building in disaster management.

13. (a) Discuss the basic principles of disaster management.

Or

(b) Explain the role of building design and construction in mitigating the impact of earthquakes.

14. (a) Describe the various methods for generating awareness about disaster preparedness.

Or

(b) Explain the use of GIS and remote sensing techniques in disaster management.

15. (a) Discuss the disaster management structure in India, including the roles of national, state, and district level authorities.

Or

(b) Explain the gaps in disaster policy and administration in India.

Part C

(5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Discuss the different types of natural disasters, providing examples of each.

Or

- (b) Explain the causes and consequences of man-made disasters, such as terrorism, industrial accidents, and environmental pollution.

17. (a) Describe the multi-disciplinary nature of disaster management and the various stakeholders involved.

Or

- (b) Explain the concept of risk management in the context of disaster management, including risk identification, reduction, and transfer.

18. (a) Discuss the disaster management cycle in detail, explaining the activities involved in each stage.

Or

- (b) Explain the role of early warning systems in disaster preparedness and provide examples of such systems.

19. (a) Discuss the importance of training and drills in preparing for disasters.

Or

- (b) Explain the process of conducting a disaster risk assessment and developing a disaster preparedness plan.

20. (a) Describe the role of the United Nations and its agencies in international disaster management.

Or

- (b) Discuss the challenges and opportunities for improving disaster administration and mitigation in India.
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C-6881

Sub. Code

30737

M.B.A. DEGREE EXAMINATION, NOVEMBER 2025.

Third Semester

Environment And Industrial Safety

FOOD HYGIENE AND SANITATION

(2023 onwards)

Duration : 3 Hours

Maximum : 75 Marks

Part A

(10 × 1 = 10)

Answer **all** questions.

1. What is the primary goal of food quality control?
 - (a) To ensure food products meet safety standards
 - (b) To enhance the taste and appearance of food
 - (c) To reduce production costs
 - (d) To increase sales

2. Which of the following is a quality characteristic of milk?
 - (a) Fat content
 - (b) Protein content
 - (c) Presence of bacteria
 - (d) All of the above

3. Physical contamination of food can be caused by:
- (a) Foreign objects like hair or glass
 - (b) Pesticide residues
 - (c) Bacterial growth
 - (d) Heavy metals
4. Pest control in food processing facilities is important to prevent:
- (a) Damage to equipment
 - (b) Contamination of food
 - (c) Spread of diseases
 - (d) All of the above
5. Which of the following is a principle of quality assurance?
- (a) Prevention is better than cure
 - (b) Focus on customer satisfaction
 - (c) Continuous improvement
 - (d) All of the above
6. Good Hygienic Practices (GHP) include:
- (a) Proper handwashing
 - (b) Wearing clean uniforms
 - (c) Avoiding cross-contamination
 - (d) All of the above

7. PFA stands for:
- (a) Prevention of Food Adulteration Act
 - (b) Public Food Authority
 - (c) Processed Food Association
 - (d) Pure Food Act
8. The Codex Alimentarius Commission is responsible for:
- (a) Developing international food standards
 - (b) Regulating food trade between countries
 - (c) Conducting food safety research
 - (d) All of the above
9. Food alerts are issued to:
- (a) Warn consumers about potentially unsafe food products
 - (b) Promote new food products
 - (c) Provide information about food recalls
 - (d) Both a and c
10. Which of the following is an important aspect of food packaging?
- (a) Protecting food from damage and contamination
 - (b) Providing information about the product
 - (c) Ensuring proper labeling
 - (d) All of the above

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the importance of quality control in ensuring consumer satisfaction and maintaining brand reputation in the food industry.

Or

- (b) Describe the various factors that can influence the quality of food products, from production to consumption.

12. (a) Discuss the different types of foodborne hazards and their potential health effects.

Or

- (b) Explain the role of sanitation in preventing and controlling foodborne illnesses.

13. (a) Discuss the concept of Total Quality Management (TQM) and its application in the food industry.

Or

- (b) Explain the importance of Good Agricultural Practices (GAP) in ensuring food safety and quality.

14. (a) Describe the role of the Food Safety and Standards Authority of India (FSSAI) in regulating food safety in India.

Or

- (b) Explain the key features of the SPS and TBT agreements of the WTO in relation to food trade.

15. (a) Discuss the importance of food surveillance and food product recalls in protecting public health.

Or

- (b) Explain the role of export control systems in ensuring the safety and quality of food products exported from India.

Part C (5 × 8 = 40)

Answer **all** questions, choosing either (a) or (b).

16. (a) Discuss the methods used for quality assessment of fruits, vegetables, and meat in the food industry.

Or

- (b) Explain the importance of proper sampling techniques in food quality evaluation.

17. (a) Describe the various cleaning compounds and sanitation techniques used in food processing facilities.

Or

- (b) Explain the different methods for pest control in food establishments and discuss their advantages and disadvantages.

18. (a) Discuss the principles and implementation of Good Manufacturing Practices (GMP) in the food industry.

Or

- (b) Explain the steps involved in conducting a risk assessment for food safety hazards.

19. (a) Discuss the role of international regulatory agencies, such as the US FDA and the Codex Alimentarius Commission, in ensuring global food safety.

Or

- (b) Explain the different ISO standards related to food quality and safety, such as ISO 22000 and ISO 9000.
20. (a) Discuss the challenges and opportunities in the import and export of food products in India.

Or

- (b) Explain the importance of proper packaging and labeling for food products, including the information that should be displayed on food labels.
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