C–8049	Sub. Code 30711

M.B.A. DEGREE EXAMINATION, APRIL 2026

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 is an example of heat transfer by radiation?

   (a) A hot air balloon rising

   (b) Feeling the warmth of the sun

   (c) Heat traveling through a metal rod

   (d) Water boiling in a pot

2. Auto-ignition temperature refers to:

   (a) The temperature at which a liquid boils

   (b) The temperature at which a substance ignites spontaneously without a spark or flame

   (c) The lowest temperature at which a liquid gives off enough vapor to form an ignitable mixture

   (d) The temperature at which a solid melts

3. A fire involving energized electrical equipment is classified as:

(a) Class A

(b) Class B

(c) Class C

(d) Class D

4. Smothering a fire involves:

(a) Removing the heat source

(b) Removing the fuel source

(c) Removing the oxygen supply

(d) Cooling the fire

5. Which fire extinguisher is suitable for Class C fires?

(a) Water

(b) Foam

(c) Dry chemical

(d) CO_2

6. Which detector is designed to respond to the light emitted by a flame?

(a) Heat detector

(b) Smoke detector

(c) Flame detector

(d) Carbon monoxide detector

7. A UV flame detector senses:

(a) Infrared radiation

(b) Ultraviolet radiation

(c) Visible light

(d) Heat

8. Terrace tanks are used in fire fighting systems to:

(a) Store water at a higher elevation for gravity feed

(b) Provide a connection for fire hoses

(c) House fire pumps

(d) Store foam concentrate

9. Occupant load refers to:

(a) The weight of the building's contents

(b) The number of people present in a building

(c) The size of the building

(d) The number of exits in a building

10. UEL stands for:

(a) Upper Explosion Limit

(b) Underground Evacuation Limit

(c) Ultimate Emission Level

(d) Universal Equipment List

Part B (5 × 5 = 25)

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

11. (a) Explain the fire triangle and its application in fire prevention.

Or

(b) Describe the classification of hazardous areas and their importance in fire safety.

12. (a) Discuss the fire safety measures to be taken in warehouses and garages.

Or

(b) Explain the process of selecting the appropriate size and number of fire extinguishers for a given area.

13. (a) Describe the installation and maintenance procedures for fire detection and alarm systems.

Or

(b) Explain the importance of regular testing of fire detection systems.

14. (a) Discuss the requirements for fire pumps and pump houses in firefighting systems.

Or

(b) Explain the role of risers and fire service inlets in firefighting installations.

15. (a) Describe the different types of fire escapes and staircases.

Or

(b) Explain the precautions to be taken during hot work activities to prevent fires.

Part C ($5 \times 8 = 40$)

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

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

Or

(b) Discuss the fire safety requirements for high-rise buildings, including compartmentation, smoke control, and evacuation strategies.

17. (a) Evaluate the importance of training and drills in fire safety and discuss different training methods for various occupancies.

Or

(b) Explain the procedures for refilling and maintaining fire extinguishers, including record keeping and quality control.

18. (a) Discuss the factors to be considered when selecting and installing fire detectors, including sensitivity, location, and environmental conditions.

Or

(b) Explain the importance of spares management in ensuring the reliability of fire detection and alarm systems.

19. (a) Discuss the firefighting requirements for shopping malls and theatres, including emergency exits, fire suppression systems, and crowd management.

Or

(b) Explain the challenges and solutions for fire protection in educational institutions, considering the specific needs of students and staff.

20. (a) Evaluate the effectiveness of different fire suppression systems, such as sprinklers and gaseous agents, for various fire hazards.

Or

(b) Discuss the legal and ethical responsibilities of building owners and occupants in ensuring fire safety.

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C–8050	Sub. Code 30712

M.B.A. DEGREE EXAMINATION, APRIL 2026

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 of the following is NOT a characteristic of management?
   (a) Goal-oriented (b) Intangible
   (c) Rigid (d) Continuous

2. Which of Fayol's principles emphasizes clear lines of authority?
   (a) Unity of command
   (b) Scalar chain
   (c) Centralization
   (d) Discipline

3. Planning primarily involves:
   (a) Organizing resources
   (b) Setting objectives and determining courses of action
   (c) Directing employees
   (d) Controlling performance

4. Which of the following is a disadvantage of planning?
   (a) Provides direction
   (b) Reduces uncertainty
   (c) Can be time-consuming
   (d) Facilitates control

5. Delegation of authority involves :
   (a) Centralizing decision-making
   (b) Assigning tasks and responsibility
   (c) Micromanaging employees
   (d) Avoiding accountability

6. Which leadership style involves high task and low relationship behaviour?
   (a) Telling (b) Selling
   (c) Participating (d) Delegating

7. Manpower planning primarily focuses on:
   (a) Financial resources
   (b) Human resources
   (c) Material resources
   (d) Technological resources

8. Controlling primarily involves:
   (a) Setting objectives
   (b) Measuring performance and taking corrective action
   (c) Motivating employees
   (d) Planning activities

9. Which of the following is NOT a stage of the conflict process?
   (a) Latent conflict
   (b) Perceived conflict
   (c) Manifest conflict
   (d) Conflict resolution (though resolution is the goal)

10. Culture shock refers to:

(a) The feeling of disorientation experienced when in a new culture

(b) A sudden change in organizational culture

(c) A type of cultural dance

(d) A cultural festival

Part B (5 × 5 = 25)

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

11. (a) Explain Fayol's principles of management.

Or

(b) Discuss the importance and limitations of planning.

12. (a) Describe the different leadership styles.

Or

(b) Explain the various theories of motivation.

13. (a) Discuss the elements of control.

Or

(b) Explain the functions of a controller.

14. (a) Describe the theories of personality.

Or

(b) Explain the process of learning.

15. (a) Discuss the sources of stress.

Or

(b) Explain the different approaches to organizational effectiveness.

Part C

(5 × 8 = 40)

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

16. (a) Analyse the evolution of management thought.

Or

(b) Discuss the steps involved in the decision-making process.

17. (a) Evaluate the importance of delegation of authority and explain the factors to consider when delegating.

Or

(b) Discuss the social and ethical responsibilities of management.

18. (a) Explain the characteristics of an effective control system.

Or

(b) Discuss the role of global managers in international management.

19. (a) Describe the characteristics of effective groups.

Or

(b) Explain the Hersey-Blanchard situational leadership theory.

20. (a) Discuss the managerial implications of organizational effectiveness.

Or

(b) Explain the challenges and opportunities in international organizational behaviour.

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C–8051	Sub. Code
	30713

M.B.A. DEGREE EXAMINATION, APRIL 2026

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. Flash 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 with air

   (c) The temperature at which a liquid boils

   (d) The temperature at which a solid melts

2. Which of these is a type of PPE?

   (a) First aid kit

   (b) Safety gloves

   (c) Fire extinguisher

   (d) Emergency exit

3. An incident is:

(a) An event that results in injury or damage

(b) An event that could have resulted in injury or damage

(c) A planned safety procedure

(d) A type of fire

4. "Which part of a safety helmet is designed to absorb impact?

(a) Shell

(b) Harness

(c) Chin strap

(d) Visor

5. Which fire extinguisher is NOT suitable for electrical fires?

(a) CO_2

(b) Dry chemical

(c) Water

(d) Halon (though now largely phased out due to environmental concerns)

6. Which type of glove is suitable for handling chemicals?

(a) Cotton gloves

(b) Latex gloves

(c) Leather gloves

(d) Nitrile gloves

7. A dry pipe sprinkler system is used:

(a) In areas where freezing temperatures are a concern

(b) In areas with high fire risk

(c) In office buildings

(d) In residential buildings

8. Which device initiates a fire alarm system?

(a) Sprinkler head

(b) Smoke detector

(c) Alarm bell

(d) Control panel

9. Which of the following is a potential skin hazard?

(a) Sunlight

(b) Chemicals

(c) Sharp objects

(d) All of the above

10. A self-contained breathing apparatus (SCBA) is used:

(a) When working in oxygen-deficient atmospheres

(b) For protection against splashes

(c) For eye protection

(d) For hand protection

Part B (5 × 5 = 25)

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

11. (a) Explain the different classes of fires and give examples of each.

Or

(b) Describe the different methods of heat transfer.

12. (a) Discuss the importance of head protection and describe the different types of safety helmets.

Or

(b) Explain the different types of fire extinguishers and their appropriate uses.

13. (a) Describe the different types of hand injuries and how to prevent them.

Or

(b) Explain the working principle of a sprinkler system and its different types.

14. (a) Discuss the different types of detectors used in fire alarm systems.

Or

(b) Explain the various types of skin protection and their applications.

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

Or

(b) Explain the safe handling and storage of flammable and combustible liquids.

Part C

(5 × 8 = 40)

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

16. (a) Analyse the importance of risk assessment in workplace safety and describe the steps involved.

Or

(b) Discuss the different types of PPE and their specific applications in various industries.

17. (a) Evaluate the effectiveness of different fire suppression systems for various types of fires.

Or

(b) Explain the procedures for inspecting, maintaining, and testing fire extinguishers.

18. (a) Discuss the factors to consider when selecting hand and leg protection for specific tasks.

Or

(b) Explain the installation, maintenance, and testing requirements for sprinkler systems.

19. (a) Describe the different types of fire alarm systems and their components, including the control panel and notification devices.

Or

(b) Discuss the measures to prevent and treat skin injuries and diseases in the workplace.

20. (a) Explain the selection, use, and maintenance of respiratory protection equipment, including respirators and SCBAs.

Or

(b) Discuss the hazards associated with hot work and the necessary precautions to prevent fires and explosions.

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C–8052	Sub. Code
	30714

M.B.A. DEGREE EXAMINATION, APRIL 2026

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. "Which of the following is NOT a common human factor associated with construction accidents?

   (a) Lack of training

   (b) Complacency

   (c) Proper safety equipment

   (d) Fatigue

2. Pre-construction meetings primarily focus on:

   (a) Project finances

   (b) Safety planning and coordination

   (c) Material procurement

   (d) Labour negotiations

3. Which type of excavation is generally considered the most hazardous?

(a) Basement excavation

(b) Trench excavation

(c) Wide excavation

(d) Shaft excavation

4. What is a crucial step before blasting operations?

(a) Post-blast inspection

(b) Pre-blast inspection

(c) Ignoring safety regulations

(d) Rushing the process

5. OSHA 3146 primarily focuses on:

(a) Electrical safety

(b) Fall protection

(c) Material handling

(d) Equipment operation

6. A controlled access zone is used to:

(a) Restrict access to hazardous areas

(b) Prevent unauthorized entry

(c) Store materials

(d) Designate parking areas

7. Which of the following is NOT a typical inspection point for a crane?

(a) Wire ropes

(b) Operator's lunchbox

(c) Brake system

(d) Hydraulic system

8. What is the primary safety concern with concrete vibrators?

(a) Noise pollution

(b) Electric shock

(c) Dust generation

(d) Material spillage

9. A key to safe demolition is:

(a) Rushing the process

(b) Pre-survey inspection

(c) Ignoring site supervision

(d) Using explosives without proper training

10. Which of these is a common health hazard during demolition?

(a) Asbestos exposure

(b) Pleasant aromas

(c) Unlimited parking

(d) Financial bonuses

Part B (5 × 5 = 25)

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

11. (a) Explain the problems that impede safety in the construction industry.

Or

(b) Discuss the various contractual clauses related to safety in construction projects.

12. (a) Describe the hazards associated with working in confined spaces and the preventive measures.

Or

(b) Explain the safety precautions needed during the erection and dismantling of scaffolding.

13. (a) Discuss the different types of fall protection systems used in construction.

Or

(b) Explain the OSHA requirements for working at heights.

14. (a) Describe the safety precautions to be taken while operating earthmoving equipment.

Or

(b) Explain the inspection and testing procedures for hoisting cranes.

15. (a) Discuss the key steps involved in safe demolition work.

Or

(b) Explain the fire hazards associated with construction sites and the preventive methods.

Part C

(5 × 8 = 40)

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

16. (a) Analyse the causes of fatal accidents in the construction industry and suggest management systems to prevent them.

Or

(b) Discuss the importance of education and training in promoting safety in construction.

17. (a) Explain the hazards associated with tunnelling and the safety measures to be taken.

Or

(b) Describe the challenges and safety considerations for constructing high-rise buildings.

18. (a) Evaluate the importance of work permit systems for working at heights and discuss their implementation.

Or

(b) Explain the different types of safety nets and their applications in construction.

19. (a) Discuss the safety aspects related to the selection, operation, and maintenance of concrete mixers and vibrators.

Or

(b) Analyse the hazards associated with manual handling in construction and suggest preventive measures.

20. (a) Explain the different methods of demolition and the safety considerations for each including waste management

Or

(b) Discuss the health hazards arising from demolition work and the measures to mitigate them.

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C–8053	Sub. Code 30715

M.B.A. DEGREE EXAMINATION, APRIL 2026

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. Which of the following best defines the scope of environmental studies?

   (a) Mathematical modeling of climate patterns

   (b) Interactions between living organisms and their surroundings

   (c) Study of economic policies

   (d) Analysis of historical events

2. Why is public awareness crucial in environmental studies?

   (a) To ignore environmental regulations

   (b) To promote sustainable practices and responsible behavior

   (c) To increase industrial profits

   (d) To encourage resource exploitation

3. What is a primary consequence of deforestation?

(a) Decreased global temperatures

(b) Soil erosion and habitat loss

(c) Increased atmospheric oxygen

(d) Enhanced water retention in soil

4. Which of the following is a renewable energy source?

(a) Nuclear energy

(b) Solar energy

(c) Coal

(d) Natural gas

5. What does a food web illustrate?

(a) The decomposition of inorganic materials

(b) Interconnected food chains within an ecosystem

(c) The linear flow of energy in an ecosystem

(d) The process of photosynthesis

6. What does in-situ conservation involve?

(a) Creating artificial ecosystems

(b) Preserving species in their natural habitats

(c) Breeding endangered species in zoos

(d) Storing seeds in gene banks

7. What is the primary cause of acid rain?

(a) Emissions of sulfur dioxide and nitrogen oxides

(b) Radioactive waste

(c) Excessive use of fertilizers

(d) Discharge of untreated sewage

8. What does eutrophication in water bodies primarily result from?

(a) Increased dissolved oxygen

(b) Nutrient pollution from fertilizers

(c) Reduced algal growth

(d) Decreased water temperature

9. What is the primary purpose of documenting environmental assets during fieldwork?

(a) Replacing natural ecosystems with artificial structures

(b) Assessing ecological status and planning for conservation

(c) Promoting industrial development without considering the environment

(d) Ignoring local pollution sources

10. What does studying simple ecosystems like a pond help in understanding?

(a) Advanced engineering concepts

(b) Basic ecological principles and interactions

(c) Global economic trends

(d) International political relations

Part B (5 × 5 = 25)

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

11. (a) Explain the role of multidisciplinary approaches in addressing environmental issues.

Or

(b) Briefly describe the impacts of mineral extraction on local ecosystems.

12. (a) Discuss the effects of overgrazing on land resources.

Or

(b) Explain the concept of equitable resource use.

13. (a) What are the different types of biodiversity?

Or

(b) Describe the significance of ecological pyramids.

14. (a) Explain the effects of thermal pollution on aquatic life.

Or

(b) What are the key differences between endangered and endemic species?

15. (a) Describe the process of conducting a visit to a local polluted site.

Or

(b) What are the benefits of studying common plant and insect species?

Part C

(5 × 8 = 40)

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

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

Or

(b) Discuss the challenges and solutions related to water resource management.

17. (a) Evaluate the role of forests in maintaining ecological balance and supporting human livelihoods.

Or

(b) Discuss the environmental and social impacts of large dam projects.

18. (a) Explain the importance of biodiversity conservation in maintaining ecosystem stability.

Or

(b) Describe the threats to biodiversity in coastal ecosystems.

19. (a) Analyze the causes, effects, and control measures of soil pollution.

Or

(b) Discuss the environmental impacts of nuclear waste disposal.

20. (a) Describe the methodology for studying a local grassland ecosystem during fieldwork.

Or

(b) Discuss the importance of community participation in environmental conservation efforts.

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C–8054

Sub. Code
30716A

M.B.A. DEGREE EXAMINATION, APRIL 2026.

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. Inherently safer design focuses on

   (a) Adding more safety equipment

   (b) Eliminating hazards at the source

   (c) Developing emergency procedures

   (d) Training operators

2. Which type of reactor is characterized by adding reactants all at once?

   (a) Continuous reactor

   (b) Batch reactor

   (c) Semi-batch reactor

   (d) Plug flow reactor

3. Overpressure protection in pressure systems is achieved by

(a) Increasing the vessel wall thickness

(b) Using pressure relief devices

(c) Lowering the operating temperature

(d) Adding a rupture disk

4. Pre-commissioning documents typically include

(a) Operating procedures

(b) Equipment manuals

(c) Inspection reports

(d) All of the above

5. Which NDT method uses sound waves to detect flaws?

(a) Radiographic testing

(b) Ultrasonic testing

(c) Magnetic particle testing

(d) Dye penetrant testing

6. Operating discipline emphasizes

(a) Flexibility in procedures

(b) Adherence to established procedures

(c) Improvisation in emergencies

(d) Ignoring safety regulations

7. A permit system is used for

(a) Authorizing specific tasks

(b) Tracking production output

(c) Managing finances

(d) Scheduling maintenance

8. Purging involves

(a) Cleaning equipment

(b) Removing hazardous substances

(c) Repairing equipment

(d) Isolating equipment

9. API RP 520 and 521 primarily deal with

(a) Pressure relief devices

(b) Storage tank design

(c) Pipeline inspection

(d) Fire protection systems

10. Which of the following is a key consideration in storage layout?

(a) Segregation of incompatible materials

(b) Minimizing storage space

(c) Ignoring fire protection

(d) Maximizing accessibility regardless of hazard

Part B $(5 \times 5 = 25)$

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

11. (a) Describe the steps involved in the design process for a chemical plant.

Or

(b) Explain the different types of batch reactors and their applications.

12. (a) Discuss the various commissioning phases and the organization required for successful commissioning.

Or

(b) Explain the different methods of leak testing and monitoring in pressure systems.

13. (a) Describe the format and content of operating procedures and inspection checklists.

Or

(b) Explain the operating activities and associated hazards in refinery units.

14. (a) Discuss the management of maintenance and the hazards involved.

Or

(b) Explain the different types of emergency planning, including onsite and offsite plans.

15. (a) Describe the general considerations for storage of petroleum products, including tank design and layout.

Or

(b) Explain the specific storage requirements for LPG and LNG, including pressure storage and refrigerated storage.

Part C (5 × 8 = 40)

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

16. (a) Analyse the importance of inherently safer design in chemical plant safety.

Or

(b) Discuss the different types of pressure relief devices and their design considerations.

17. (a) Evaluate the importance of plant inspection and monitoring in preventing failures.

Or

(b) Explain the various non-destructive testing methods used in plant inspection.

18. (a) Discuss the importance of operating discipline and emergency procedures in plant operation.

Or

(b) Explain the hazards associated with start-up and shut-down operations and the necessary precautions.

19. (a) Describe the permit system and its role in ensuring safe maintenance activities.

Or

(b) Discuss the management of plant modifications and the control of modifications process.

20. (a) Explain the fire prevention and protection measures for storage tanks and vessels.

Or

(b) Discuss the storage hazards associated with toxic chemicals and the safety precautions to be taken.

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C–8055	Sub. Code 30716B/70116B

M.B.A./M.Sc. DEGREE EXAMINATION, APRIL 2026.

First Semester

WORK STUDY AND ERGONOMICS

(Common for M.B.A. (Environment and Industrial Safety)/ M.Sc. (Industrial Safety & Hygiene))

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Method study primarily aims to
   (a) Reduce work content
   (b) Increase production speed
   (c) Improve worker morale
   (d) Reduce material costs
2. Which of the following is NOT a technique used in work study?
   (a) Time study
   (b) Motion study
   (c) Financial analysis
   (d) Activity sampling
3. Ergonomics is concerned with the interaction between:
   (a) People and their work environment
   (b) Machines and other machines
   (c) Managers and employees
   (d) Computers and software

4. Which of these contributes to poor ergonomics?
   (a) Repetitive movements
   (b) Awkward postures
   (c) Excessive force
   (d) All of the above
5. Which of the following is a type of respiratory protection?
   (a) Safety glasses (b) Respirator
   (c) Gloves (d) Safety shoes
6. PPE is most effective when
   (a) Used correctly and consistently
   (b) Stored improperly
   (c) Used occasionally
   (d) Chosen randomly
7. Which of the following is crucial for safe machine operation?
   (a) Proper training
   (b) Regular maintenance
   (c) Effective guarding
   (d) All of the above
8. Machine guarding is designed to prevent contact with
   (a) Moving parts (b) Sharp edges
   (c) Hot surfaces (d) All of the above
9. Which of the following is a type of control in a man-machine system?
   (a) Button (b) Lever
   (c) Switch (d) All of the above
10. Which of the following can contribute to fatigue?
   (a) Long work hours (b) Stress
   (c) Poor lighting (d) All of the above

Part B (5 × 5 = 25)

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

11. (a) Explain the benefits of work study for both the organization and the workers.

Or

(b) Discuss the different types of work-related hazards and how they can be identified and controlled.

12. (a) Describe the principles of ergonomics and their application in the design of workstations.

Or

(b) Explain the different types of ergonomic assessments and their purpose.

13. (a) Discuss the legal requirements for providing and using personal protective equipment (PPE) in the workplace.

Or

(b) Explain the process of selecting appropriate PPE for different hazards.

14. (a) Describe the safety considerations in the design and layout of machinery.

Or

(b) Explain the importance of regular inspection and maintenance of machinery for preventing accidents.

15. (a) Discuss the factors to consider when designing controls and displays for man-machine interfaces.

Or

(b) Explain the strategies for managing fatigue and improving vigilance in the workplace.

Part C

(5 × 8 = 40)

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

16. (a) Analyse the importance of work study in improving productivity, quality, and safely in various industries.

Or

(b) Discuss the role of automation and robotics in improving workplace safety and efficiency.

17. (a) Evaluate the impact of ergonomic interventions on worker health, well-being, and productivity.

Or

(b) Explain the different methods for assessing and controlling ergonomic risks in the workplace.

18. (a) Discuss the challenges and best practices in implementing and managing a comprehensive PPE program.

Or

(b) Explain the role of training and education in promoting the proper use and maintenance of PPE.

19. (a) Discuss the different types of machine guarding and their effectiveness in preventing accidents.

Or

(b) Explain the statutory provisions and industry standards related to machine safety and guarding.

20. (a) Explain the principles of human factors engineering and their application in the design of man-machine systems.

Or

(b) Discuss the strategies for optimizing the man-machine interface to enhance performance, safety and user satisfaction.

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C–8056	Sub. Code 30721

M.B.A. DEGREE EXAMINATION, APRIL 2026.

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. What is the primary goal of a safety inspection?

   (a) To identify potential hazards

   (b) To train employees on safety procedures

   (c) To investigate accidents

   (d) To develop a safety policy

2. Which technique is most effective for identifying the root causes of past accidents?

   (a) Safety survey

   (b) Safety inspection

   (c) Job safety analysis

   (d) Incident Recall Technique (IRT)

3. According to Maslow, which need is fulfilled after physiological and safety needs are met?

(a) Self-actualization

(b) Esteem

(c) Love and belonging

(d) Cognitive needs

4. Which management theory emphasizes continuous improvement through a cycle of planning, doing, checking, and acting?

(a) McGregor's Theory X and Y

(b) Herzberg's Motivational Theory

(c) The Deming Cycle

(d) Contingency Theory

5. What is the first step in the risk management process?

(a) Risk analysis

(b) Hazard assessment

(c) Hazard identification

(d) Risk control

6. Which risk assessment technique uses a diagram to analyze the causes and effects of an undesired event?

(a) FTA (Fault Tree Analysis)

(b) JSA (Job Safety Analysis)

(c) FMEA (Failure Mode and Effects Analysis)

(d) HAZOP (Hazard and Operability Study)

7. Which accident causation theory focuses on the interaction between humans, machines, and the environment?

   (a) Domino Theory

   (b) Human Factors Theory

   (c) Systems Theory

   (d) Energy Release Theory

8. What is a "near miss"?

   (a) A minor accident

   (b) An accident that results in property damage

   (c) An unplanned event that did not result in injury or damage but had the potential to do so

   (d) An accident that is caused by human error

9. What is the purpose of life testing?

   (a) To improve product design

   (b) To determine the expected lifespan of a product

   (c) To identify potential failure modes

   (d) All of the above

10. Which type of redundancy involves having a backup system that operates only when the primary system fails?

   (a) Unit redundancy

   (b) Standby redundancy

   (c) Parallel redundancy

   (d) System redundancy

Part B

$(5 \times 5 = 25)$

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

11. (a) Explain the concept of safety sampling. How is it used in a safety management program?

Or

(b) Describe the key elements of a safety survey.

12. (a) Discuss the importance of budgeting for safety. What types of safety-related expenses should be included in a budget?

Or

(b) Explain the concept of Management by Objectives (MBO). How can MBO be applied to improve safety performance?

13. (a) Describe the steps involved in a Hazard and Risk Assessment (HRA).

Or

(b) Explain the concept of Risk Assessment/ Vulnerability Analysis (RA/VA). What are the key components of a RA/VA?

14. (a) Discuss the different types of accident investigation techniques. Provide examples of when each technique might be most appropriate.

Or

(b) Explain the "Epidemiological Theory" of accident causation. How does this theory view the causes of accidents?

15. (a) Explain the concept of maintainability. How does maintainability contribute to system reliability and safety?

Or

(b) Describe the different types of product life cycles. How do safety and reliability considerations vary across these life cycle stages?

Part C ($5 \times 8 = 40$)

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

16. (a) Develop a comprehensive safety policy for a manufacturing company. What key elements should be included in this policy?

Or

(b) Explain the process of evaluating the performance of supervisors on safety. What metrics and methods can be used for this evaluation?

17. (a) Discuss the principles of contingency theory. How can contingency theory be applied to manage safety in different situations?

Or

(b) Explain the concept of systems thinking. How can systems thinking be used to improve workplace safety?

18. (a) Discuss the advantages and disadvantages of using quantitative risk analysis procedures. Provide examples of such procedures.

Or

(b) Explain the FMEA (Failure Mode and Effects Analysis) process. How does FMEA help to improve product and system safety?

19. (a) Discuss the "Behavior Theory" and Combination Theory" of accident causation. How do these theories explain the causes of accidents?

Or

(b) Describe the Multilinear Events Sequencing Method. How is this method used in accident investigation?

20. (a) Explain the Weibull model and its applications in reliability analysis.

Or

(b) Discuss the factors that influence system reliability. How can these factors be addressed to improve overall system safety and performance?

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C–8057

Sub. Code
30722

M.B.A. DEGREE EXAMINATION, APRIL 2026.

Second Semester

Environment and Industrial Safety

EHS LEGISLATIONS

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the questions.

1. The Factories Act, 1948 applies to

   (a) All workplaces in India

   (b) Only factories with more than 10 workers

   (c) Factories using power and employing 10 or more workers, and factories not using power and employing 20 or more workers

   (d) Only government-owned factories

2. Which of the following is NOT a welfare provision under the Factories Act?

   (a) Canteen facilities

   (b) First aid facilities

   (c) Annual bonuses

   (d) Drinking water

3. The Noise Pollution (Regulation and Control) Rules, 2000 aim to

(a) Promote the use of loudspeakers

(b) Control noise levels in different zones

(c) Encourage industrial activities in residential areas

(d) Regulate the import of musical instruments

4. Which of the following requires a No Objection Certificate (NOC) from the Pollution Control Board?

(a) Setting up a new factory

(b) Expanding an existing factory

(c) Operating a hazardous process

(d) All of the above

5. The MSIHC Rules require the occupier to provide information to workers about

(a) The hazards of chemicals they handle

(b) Emergency procedures

(c) Safe work practices

(d) All of the above

6. A Safety Data Sheet (SDS) must be provided

(a) Only to government officials

(b) To anyone who requests it

(c) With every hazardous chemical

(d) Only in case of an accident

7. The Workmen's Compensation Act provides compensation for

(a) Injuries sustained during work

(b) Occupational diseases

(c) Death resulting from work-related incidents

(d) All of the above

8. The Building and Other Construction Workers Act requires

(a) Registration of construction workers

(b) Provision of safety equipment at construction sites

(c) Welfare fund for construction workers

(d) All of the above

9. Which international standard promotes occupational health and safety management systems?

(a) ISO 9001 (b) ISO 14001

(c) OHSAS 18001 (d) SA 8000

10. The William-Steiger Act of 1970 led to the creation of

(a) OSHA in the USA

(b) HASAWA in the UK

(c) The Factories Act in India

(d) The Environmental Protection Act in India

Part B ($5 \times 5 = 25$)

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

11. (a) Explain the provisions related to working hours and employment of young persons under the Factories Act, 1948.

Or

(b) Discuss the importance of health and safety provisions in the Factories Act for protecting workers.

12. (a) Describe the role of the Pollution Control Board in preventing and controlling environmental pollution.

Or

(b) Explain the key features of the Batteries (Management and Handling) Rules, 2001.

13. (a) Discuss the requirements for preparing an off-site plan under the MSIHC Rules.

Or

(b) Explain the importance of providing safety training to workers handling hazardous chemicals.

14. (a) Describe the key provisions of the Motor Vehicles Rules related to the transportation of hazardous goods.

Or

(b) Explain the purpose and scope of the Explosives Act, 1983.

15. (a) Discuss the key principles and requirements of the ISO 14001 standard for environmental management systems.

Or

(b) Explain the role of the American National Standards Institute (ANSI) in developing and promoting consensus standards in various fields, including safety.

Part C (5 × 8 = 40)

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

16. (a) Discuss the role of the Factories Act, 1948, in ensuring safe and healthy working conditions in factories.

Or

(b) Explain the provisions related to special processes and dangerous operations under the Factories Act and the Tamil Nadu Factories Rules.

17. (a) Discuss the various measures for the prevention, control, and abatement of environmental pollution under the Environment (Protection) Act, 1986.

Or

(b) Explain the provisions of the Water Act, 1974, and its role in protecting water resources from pollution.

18. (a) Discuss the responsibilities of occupiers in managing the risks associated with hazardous chemicals under the MSIHC Rules.

Or

(b) Explain the importance of safety reports and safety data sheets in communicating hazard information and promoting safe handling of chemicals.

19. (a) Discuss the key provisions of the Petroleum Rules and their significance in ensuring the safe handling and storage of petroleum products.

Or

(b) Explain the purpose and scope of the Pesticides Act and its role in regulating the use of pesticides to protect human health and the environment.

20. (a) Discuss the key features of the Health and Safety at Work Act (HASAWA) 1974 of the UK and its impact on workplace safety culture.

Or

(b) Explain the role of international standards and organizations in Promoting global harmonization of safety and health practices.

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C–8058

Sub. Code
30723

M.B.A. DEGREE EXAMINATION, APRIL 2026.

Second Semester

Environment and Industrial Safety

PROCESS 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 core element of a Process Safety Management (PSM) system?

   (a) Incident Investigation

   (b) Trade Secret Protection

   (c) Employee Participation

   (d) Emergency Planning and Response

2. A P & ID (Piping and Instrumentation Diagram) is MOST useful for

   (a) Understanding the chemical reactions involved

   (b) Visualizing the physical layout of equipment and piping

   (c) Determining the electrical classification of an area

   (d) Developing emergency evacuation plans

3. Which Process Hazard Analysis (PHA) method is a systematic "brainstorming" approach?

   (a) HAZOP (Hazard and Operability Study)

   (b) What-If Analysis

   (c) FMEA (Failure Mode and Effects Analysis)

   (d) Fault Tree Analysis (FTA)

4. Operating procedures are essential for

   (a) Maximizing profits

   (b) Ensuring safe and consistent operations

   (c) Minimizing employee training costs

   (d) Reducing regulatory inspections.

5. Mechanical Integrity focuses on

   (a) Employee behavior

   (b) Equipment reliability and maintenance

   (c) Process design

   (d) Emergency response

6. Management of Change (MOC) is crucial when

   (a) Hiring new employees

   (b) Modifying a process or equipment

   (c) Conducting safety training

   (d) Purchasing new office furniture

7. Incident investigations aim to

(a) Assign blame

(b) Identify root causes

(c) Calculate fines

(d) Publicize events

8. Employee involvement in process safety is important because

(a) It reduces management's workload

(b) Employees have valuable knowledge of the process

(c) It satisfies regulatory requirements

(d) It improves public relations

9. A Hot Work Permit is required for activities like

(a) Changing a light bulb

(b) Welding or cutting

(c) Painting with non-flammable paint

(d) Routine inspections

10. Contractor safety is primarily the responsibility of

(a) The principal employer

(b) The contractor employer

(c) Both the principal and contractor employers

(d) Neither employer

Part B (5 × 5 = 25)

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

11. (a) Explain the importance of Process Safety Information (PSI). Give three examples of documents that constitute PSI.

Or

(b) Describe the potential consequences of a significant deviation from the Maximum Intended Inventory of a hazardous chemical.

12. (a) Compare and contrast HAZOP and What-If analysis for hazard identification.

Or

(b) Outline the key elements of a well-written operating procedure.

13. (a) Discuss the components of a comprehensive Mechanical Integrity program.

Or

(b) Explain the purpose and importance of a Pre-Startup Review (PSR).

14. (a) Describe the steps typically involved in an incident investigation.

Or

(b) Explain how a positive safety culture contributes to process safety.

15. (a) Discuss the responsibilities of both the principal employer and the contractor regarding contractor safety.

Or

(b) Outline the essential elements of an effective emergency response plan.

Part C (5 × 8 = 40)

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

16. (a) Develop a simplified Block Flow Diagram for a chemical process involving a hazardous material. Indicate potential hazards at each step.

Or

(b) Explain the relationship between process chemistry and process safety. How does understanding chemical reactions contribute to a safer operation?

17. (a) Discuss the challenges and best practices for conducting Process Hazard Analysis (PHA) in the pharmaceutical industry.

Or

(b) Explain the different types of process safety training and how to evaluate their effectiveness.

18. (a) Analyze the challenges of managing changes in a complex process. How does a Management of Change (MOC) system mitigate risks?

Or

(b) Explain the purpose and scope of process safety audits. What should an audit cover, and how should findings be addressed?

19. (a) Analyse common causes of process safety incidents and how proactive risk management can prevent them.

Or

(b) Discuss the importance of protecting trade secrets while ensuring process safety. How can a balance be achieved?

20. (a) Develop a framework for evaluating contractor safety performance. What metrics should be used, and how can compliance be ensured?

Or

(b) Discuss the challenges of emergency response planning for a large chemical plant. What factors should be considered, and how can the plan's effectiveness be tested?

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C–8059	Sub. Code
	30724

M.B.A. DEGREE EXAMINATION, APRIL 2026

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 a notifiable occupational disease?

   (a) Silicosis (b) Common cold

   (c) Diabetes (d) Heart disease

2. Threshold Limit Values (TLVs) refer to:

   (a) The maximum permissible noise level

   (b) The concentration of a substance to which workers can be exposed without adverse health effects

   (c) The minimum required ventilation rate

   (d) The recommended temperature for a workplace

3. Which of the following is a common method for controlling noise in the workplace?

   (a) Increasing the volume of music

   (b) Using hearing protection

   (c) Installing brighter lights

   (d) Improving employee morale

4. WBGT index is used to measure:

(a) Noise levels (b) Vibration

(c) Thermal stress (d) Lighting levels

5. Which of the following is a vital sign?

(a) Breathing (b) Hair color

(c) Shoe size (d) Favourite hobby

6. CPR is used to revive someone who is:

(a) Fainting

(b) Not breathing and has no pulse

(c) Having a seizure

(d) Conscious and alert

7. The "Rule of Nines' is used to estimate the extent of:

(a) Fractures (b) Poisoning

(c) Eye injuries (d) Burns

8. Which of the following is a symptom of shock?

(a) Flushed skin (b) Increased alertness

(c) Rapid weak pulse (d) Slow breathing

9. Which of the following is an element of industrial psychology?

(a) Financial accounting

(b) Organizational behavior

(c) Chemical engineering

(d) Mechanical design

10. Workplace stress can lead to:

(a) Improved productivity

(b) Eustress

(c) Psychosomatic disorders

(d) Increased job satisfaction.

Part B

(5 × 5 = 25)

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

11. (a) Explain the concept and spectrum of health in the context of occupational health.

Or

(b) Describe the levels of prevention of occupational diseases.

12. (a) Discuss the effects of whole-body vibration on the human body and methods for controlling it.

Or

(b) Explain the purpose of ventilation systems in the workplace and describe different types of ventilation.

13. (a) Outline the sequence of actions a first aider should take upon arriving at the scene of an accident.

Or

(b) Describe the management of a person experiencing a seizure.

14. (a) Explain the steps involved in performing CPR, including chest compressions.

Or

(b) Describe the management of different types of burns (thermal, electrical, chemical).

15. (a) Discuss the elements of industrial psychology and their relevance to occupational health.

Or

(b) Explain the concept of work-related stress and its potential health consequences.

Part C (5 × 8 = 40)

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

16. (a) Describe the notifiable occupational diseases of silicosis, asbestosis, and pneumoconiosis and preventive measures.

Or

(b) Discuss the toxic effects and prevention strategies for nickel, chromium, and manganese toxicity.

17. (a) Explain the principles of noise measurement and evaluation. Describe various noise control methods used in industries.

Or

(b) Discuss the physiological and comfort levels related to ventilation requirements. Explain the fundamentals of hood and duct designs.

18. (a) Explain the structure and functions of the musculoskeletal system, including ligaments, bone, muscles, and joints.

Or

(b) Describe the recognition and management of fainting, including aftercare. Discuss the management of diabetes.

19. (a) Describe the signs, symptoms, and management of shock. Explain the classification and types of wounds and their care.

Or

(b) Discuss the classification of fractures and the principles of immobilization in detail.

20. (a) Discuss the various psychological hazards present in the workplace and its related diseases.

Or

(b) Explain the individual and employer responsibilities in managing work stress in industry.

C–8060	Sub. Code
	30725

M.B.A. DEGREE EXAMINATION, APRIL 2026

Second Semester

Environment and Industrial Safety

HAZARD IDENTIFICATION, RISK ASSESSMENT & RISK CONTROL

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Which of the following is NOT a fundamental concept in risk management?

   (a) Hazard identification

   (b) Profit maximization

   (c) Risk assessment

   (d) Risk control

2. A checklist in risk management is used for:

   (a) Quantifying risk levels

   (b) Systematically identifying potential hazards

   (c) Developing emergency response plans

   (d) Calculating financial losses

3. "Horseplay" in the workplace is an example of a/an:

(a) Unsafe condition

(b) Unsafe act

(c) Hazardous event

(d) Risk assessment technique

4. ALARP is a principle related to:

(a) Hazard identification

(b) Risk assessment

(c) Risk control

(d) Emergency response

5. Which of the following is NOT a risk analysis method?

(a) HAZOP (b) FMEA

(c) SWOT analysis (d) FTA

6. Job Safety Analysis (JSA) focuses on:

(a) Identifying hazards in specific jobs or tasks

(b) Analyzing past accidents

(c) Evaluating financial risks

(d) Developing training programs.

7. HAZOP uses what to guide the analysis?

(a) Checklists

(b) Guide words

(c) Statistical data

(d) Expert opinions

8. FMEA is used to analyze:

(a) Potential failure modes and their effects

(b) The likelihood of accidents

(c) The costs of risk control measures

(d) Human error

9. A Risk Matrix is a tool for:

(a) Calculating risk probabilities

(b) Evaluating and ranking risks

(c) Developing risk control strategies

(d) Communicating risks to stakeholders

10. Which of the following is a key source of information for hazard analysis?

(a) Past accident records

(b) Employee opinions

(c) Industry standards

(d) All of the above

Part B

$(5 \times 5 = 25)$

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

11. (a) Define "hazard" and "risk" and explain their relationship. Give two examples of each.

Or

(b) Explain the importance of a risk register and describe its typical contents.

12. (a) Describe the risk analysis process, including the key steps involved.

Or

(b) Explain the benefits of conducting risk analysis in an organization.

13. (a) Describe the HAZOP methodology and explain the use of guide words.

Or

(b) Compare and contrast Fault Tree Analysis (FTA) and Event Tree Analysis (ETA).

14. (a) Outline the steps involved in a Hazard Identification and Risk Assessment (HIRA) study.

Or

(b) Explain the difference between qualitative and quantitative risk assessment.

15. (a) Discuss the value of analyzing past accidents for hazard identification and consequence analysis.

Or

(b) Briefly describe two major industrial disasters and the key lessons learned from each.

Part C

(5 × 8 = 40)

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

16. (a) Explain the concept of "human error" and its role in accidents. Discuss different types of human errors and strategies for mitigating them.

Or

(b) Describe the ALARP principle and explain how it is applied in practice.

17. (a) Explain the process of Root Cause Analysis (RCA) and its importance in preventing future incidents.

Or

(b) Discuss the use of cost-benefit analysis in risk management decision-making.

18. (a) Explain the FMEA methodology in detail, including the calculation of the Risk Priority Number (RPN).

Or

(b) Compare and contrast HAZOP and FMEA, highlighting their respective strengths and weaknesses.

19. (a) Describe various risk control methods and explain how to select the most appropriate method for a specific hazard.

Or

(b) Explain the importance of monitoring and reviewing risk assessments. How frequently should risk assessments be updated?

20. (a) Choose a major industrial disaster and analyze its causes, consequences, and lessons learned for modern risk management.

Or

(b) Discuss the challenges and limitations of using past accident data to predict and prevent future accidents.

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C–8061	Sub. Code
	30726A/70126A

M.B.A./M.Sc. DEGREE EXAMINATION, APRIL 2026

Second Semester

TEXTILE SAFETY

(Common for M.B.A. (Environment and Industrial Safety) / M.Sc./Industrial Safety & Hygiene)

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Which of the following is NOT a typical spinning process?
   (a) Short staple spinning
   (b) Long staple spinning
   (c) Weaving
   (d) Rotor spinning

2. A key safety concern in opening and carding machines is:
   (a) Dust generation
   (b) Noise levels
   (c) Entanglement in moving parts
   (d) All of the above

3. A significant hazard in sizing processes is:
   (a) Burns from steam and hot vessels
   (b) Exposure to dyes
   (c) Noise from looms
   (d) Ergonomic strain

4. Shuttle looms present a risk of:

(a) Eye injuries from flying shuttles

(b) Hearing loss from noise

(c) Chemical burns from dyes

(d) Musculoskeletal disorders

5. Which process involves the use of chemicals for cleaning textile materials?

(a) Carding (b) Scouring

(c) Weaving (d) Knitting

6. Mechanical finishing operations can pose hazards related to:

(a) Entanglement and crushing

(b) Chemical exposure

(c) Noise and vibration

(d) All of the above

7. A common health hazard in the textile industry is:

(a) Respiratory problems from dust and fly

(b) Skin irritation from chemicals

(c) Hearing loss from noise

(d) All of the above

8. Personal Protective Equipment (PPE) in the textile industry may include:

(a) Respirators (b) Earplugs

(c) Safety glasses (d) All of the above

9. The Factories Act and Rules address:

(a) Safety and welfare of workers

(b) Environmental regulations

(c) Product quality standards

(d) Export procedures

10. Effluent treatment in the textile industry is important for:

(a) Preventing water pollution

(b) Reducing chemical costs

(c) Improving product quality

(d) Increasing production speed

Part B $(5 \times 5 = 25)$

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

11. (a) Briefly describe the process flow in short staple spinning.

Or

(b) Explain the safety precautions required in ring frame operations.

12. (a) Discuss the hazards associated with sizing processes and their control measures.

Or

(b) Describe the safety concerns related to shuttle looms and shuttleless looms.

13. (a) Explain the hazards involved in scouring, bleaching, and dyeing processes.

Or

(b) Discuss the safety issues related to mechanical finishing operations in the textile industry.

14. (a) Describe the health hazards associated with dust, fly, and noise in textile mills and their control measures.

Or

(b) Explain the health and welfare measures specific to the textile industry.

15. (a) Discuss the relevant provisions of the Factories Act and Rules applicable to the textile industry.

Or

(b) Explain the importance of effluent treatment and waste disposal in the textile industry.

Part C

(5 × 8 = 40)

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

16. (a) Compare and contrast the process flow in short staple and long staple spinning.

Or

(b) Describe the safety precautions necessary in carding and combing operations.

17. (a) Discuss the hazards and safety measures related to knitting machines.

Or

(b) Explain the safety concerns specific to non-woven fabric manufacturing.

18. (a) Describe the various types of effluents generated in textile processing and their potential environmental impact.

Or

(b) Discuss the safety precautions required during dyeing and printing processes.

19. (a) Explain the role of personal protective equipment (PPE) in mitigating textile industry hazards. Provide specific examples.

Or

(b) Discuss special precautions for specific hazardous work environments within the textile industry (e.g., areas with high noise levels, chemical handling areas).

20. (a) Explain the legal and regulatory framework governing safety in the textile industry.

Or

(b) Discuss the challenges and best practices for effluent treatment and waste disposal in textile manufacturing.

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C–8062	Sub. Code
	30726B/70126B

M.B.A./M.Sc. DEGREE EXAMINATION, APRIL 2026

Second Semester

SAFETY IN MINES

(Common for M.B.A. (Environment and Industrial Safety)/M.Sc./Industrial Safety & Hygiene)

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Which type of mining involves the extraction of minerals from the surface?

   (a) Opencast mining

   (b) Underground mining

   (c) Tunnelling

   (d) Quarrying

2. What is a primary safety concern when working with heavy machinery in mines?

   (a) Falling objects

   (b) Electrocution

   (c) Collisions and rollovers

   (d) Exposure to hazardous gases

3. The purpose of ventilation in underground mines is to:

(a) Provide fresh air and remove harmful gases

(b) Control dust levels

(c) Regulate temperature

(d) All of the above

4. What is a common cause of accidents in winding operations?

(a) Overloading the hoist

(b) Improper signalling

(c) Equipment malfunction

(d) All of the above

5. Which of the following is a potential hazard in tunnelling?

(a) Ground collapse

(b) Flooding

(c) Exposure to hazardous materials

(d) All of the above

6. What type of personal protective equipment (PPE) is essential for reducing noise exposure in tunnelling?

(a) Safety glasses

(b) Respirators

(c) Hearing protection

(d) Gloves

7. Risk assessment helps to:

(a) Eliminate all hazards

(b) Prioritize hazards based on their risk level

(c) Guarantee that no accidents will occur

(d) Reduce paperwork

8. Which risk assessment technique involves analysing the potential failure modes of a system?

(a) Fault Tree Analysis (FTA)

(b) Failure Mode and Effect Analysis (FMEA)

(c) HAZOP

(d) Job Safety Analysis (JSA)

9. Accident investigation is crucial for:

(a) Assigning blame

(b) Identifying the root causes of accidents

(c) Calculating insurance costs

(d) Satisfying legal requirements

10. What is the purpose of emergency preparedness in the mining industry?

(a) To prevent all accidents

(b) To minimize the impact of accidents and emergencies

(c) To ensure compliance with regulations

(d) To reduce financial losses

Part B (5 × 5 = 25)

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

11. (a) Explain the safety precautions necessary when working with belt conveyors in opencast mines.

Or

(b) Discuss the importance of a well-maintained accident reporting system in mining operations.

12. (a) Describe the hazards associated with roof and side falls in underground mines and their control measures.

Or

(b) Explain the safety considerations for using explosives in underground mining.

13. (a) Discuss the hazards related to atmospheric pollution in tunnelling.

Or

(b) Explain the safety precautions necessary when working with electrical equipment in tunnelling.

14. (a) Define 'risk" and explain its relationship to hazard and vulnerability.

Or

(b) Discuss the use of statistical methods in risk assessment.

15. (a) Describe the different types of accidents that can occur in mines.

Or

(b) Explain the importance of safety audits in identifying and controlling hazards in mines.

Part C

$(5 \times 8 = 40)$

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

16. (a) Discuss the safety precautions and procedures for drilling operations in opencast mines.

Or

(b) Explain the importance of fire prevention and firefighting measures in opencast mines.

17. (a) Describe the occupational hazards and working conditions specific to underground mining.

Or

(b) Explain the use of warning sensors and gas detectors in ensuring safety in underground mines.

18. (a) Discuss the hazards associated with noise and vibration in tunnelling and their control measures.

Or

(b) Explain the importance of personal protective equipment (PPE) in tunnelling and provide specific examples.

19. (a) Explain Fault Tree Analysis (FTA) as a tool for analysing the causes of accidents and identifying potential hazards.

Or

(b) Discuss the application of Failure Mode and Effect Analysis (FMEA) in evaluating the reliability of mining equipment and systems.

20. (a) Analyse the factors contributing to accidents in mines and discuss comprehensive strategies for improving overall safety performance.

Or

(b) Explain the concept of disaster management and its importance in minimizing the impact of mining accidents.

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C–8063

Sub. Code
30726C/ 70126C

M.B.A./M.Sc. DEGREE EXAMINATION, APRIL 2026

Second Semester

(Common for M.B.A./(Environment and Industrial Safety)/M.Sc. (Industrial Safety and Hygiene)

TRANSPORT SAFETY

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. TREM cards provide information about

   (a) Traffic regulations

   (b) Emergency response procedures for hazardous materials

   (c) Vehicle maintenance schedules

   (d) Driver training requirements

2. Which of the following is a crucial factor in preventing static electricity build up in tankers?

   (a) Proper grounding

   (b) Speed of the vehicle

   (c) Driver experience

   (d) Weather conditions

3. A major cause of road accidents is

(a) Vehicle malfunction

(b) Driver error

(c) Poor road conditions

(d) All of the above

4. Preventive maintenance of motor trucks includes

(a) Regular inspections

(b) Timely replacement of worn parts

(c) Following manufacturer's recommendations

(d) All of the above

5. A tachograph is a device used to record

(a) Vehicle speed and distance travelled

(b) Driver fatigue levels

(c) Engine performance

(d) Fuel consumption

6. Safe driving incentives aim to

(a) Increase driver's salary

(b) Encourage safe driving practices

(c) Reduce fuel consumption

(d) Minimize traffic violations

7. Road alignment refers to

(a) The horizontal and vertical layout of a road

(b) The condition of the road surface

(c) The type of traffic signals used

(d) The speed limit of the road

8. Skidding is more likely to occur on

(a) Dry pavement

(b) Wet or icy pavement

(c) Straight roads

(d) Uphill slopes

9. Which of the following is a safety precaution for manual handling of materials?

(a) Using proper lifting techniques

(b) Wearing appropriate PPE

(c) Avoiding overloading

(d) All of the above

10. Grease rack operations involve

(a) Lubricating and servicing vehicles

(b) Washing vehicles

(c) Charging batteries

(d) Handling gasoline

Part B $(5 \times 5 = 25)$

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

11. (a) Explain the importance of driver training in the transportation of hazardous goods.

Or

(b) Discuss the responsibilities of a driver carrying hazardous materials.

12. (a) Describe the factors that contribute to improving safety on roads.

Or

(b) Explain the purpose and importance of motor vehicle insurance and surveys.

13. (a) Discuss the elements of a comprehensive driver safety program.

Or

(b) Explain the role of accident reporting and investigation procedures in improving road safety.

14. (a) Explain the concept of "ruling gradient" and its significance in road design.

Or

(b) Discuss the safety measures at intersections, including traffic control lines and guideposts.

15. (a) Describe the safety precautions for operating mechanical handling equipment in a shop floor.

Or

(b) Discuss the safe practices for servicing and maintaining vehicles in a repair shop.

Part C

(5 × 8 = 40)

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

16. (a) Discuss the design considerations for tanker lorries carrying hazardous goods, including safety features and warning symbols.

Or

(b) Explain the loading and decanting procedures for hazardous materials, emphasizing safety precautions.

17. (a) Describe the operation and maintenance of motor trucks, including the importance of preventive maintenance checklists.

Or

(b) Explain the provisions of the Motor Vehicles Act related to road safety and driver responsibilities.

18. (a) Discuss the use of tachographs and their role in monitoring driver behaviour and promoting road safety.

Or

(b) Explain the importance of driver relaxation and rest pauses in preventing fatigue-related accidents.

19. (a) Discuss the factors influencing road alignment and gradient, including breaking characteristics of vehicles.

Or

(b) Explain the safety practices for plant railways, including clearance, track, warning methods, and loading/unloading procedures.

20. (a) Describe the safe practices for handling gasoline and other flammable materials in a repair shop.

Or

(b) Discuss the safety precautions for operating cranes and conveyors in a shop floor environment.

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C–8064

Sub. Code
30727

M.B.A. DEGREE EXAMINATION, APRIL 2026

Second Semester

Environmental 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** the 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

$(5 \times 8 = 40)$

Answer **all** the 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.

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C–8065

Sub. Code
30731

M.B.A. DEGREE EXAMINATION, APRIL 2026

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. Workplace inspections should be conducted

   (a) Only when there is an accident

   (b) Regularly and routinely

   (c) By management only

   (d) To punish workers.

2. Which of the following is a benefit of workplace inspections?

   (a) Identifying potential hazards

   (b) Improving employee morale

   (c) Reducing insurance premiums

   (d) All of the above

3. A safety audit is

   (a) A superficial check of the workplace

   (b) A comprehensive and systematic examination of safety management systems

   (c) Conducted only by external agencies

   (d) The same as a safety inspection.

4. Which type of audit focuses on assessing the effectiveness of an organization's safety management system?

   (a) Compliance audit

   (b) System audit

   (c) Management audit

   (d) Financial audit

5. ISO 45001 provides a framework for

   (a) Managing environmental impacts

   (b) Implementing quality control procedures

   (c) Managing occupational health and safety risks

   (d) Conducting financial audits.

6. The "Plan-Do-Check-Act" (PDCA) cycle is a model for

   (a) Incident investigation

   (b) Risk assessment

   (c) Continuous improvement

   (d) Emergency response

7. Which of the following is a key principle of ISO 14001?

   (a) Pollution prevention

   (b) Employee participation

   (c) Continual improvement

   (d) All of the above

8. Life Cycle Assessment (LCA) is a technique used to evaluate the environmental impact of

(a) A product's entire life cycle

(b) A single manufacturing process

(c) Waste disposal methods

(d) Employee transportation

9. What is the purpose of eco-labeling?

(a) To mislead consumers

(b) To increase product costs

(c) To provide information about the environmental impact of products

(d) To promote international trade

10. An Environmental Impact Assessment (EIA) is conducted to

(a) Assess the financial viability of a project

(b) Identify and assess the potential environmental impacts of a project

(c) Evaluate employee satisfaction

(d) Measure the carbon footprint of a company

Part B

$(5 \times 5 = 25)$

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

11. (a) Explain the purpose and scope of workplace inspections, including the types of hazards that should be identified.

Or

(b) Discuss the importance of follow-up and monitoring after a workplace inspection to ensure effective corrective actions.

12. (a) Describe the key elements of a safety audit, including pre-audit planning, on-site activities, and reporting.

Or

(b) Explain the benefits of conducting regular safety audits for an organization.

13. (a) Discuss the role of leadership and worker participation in developing and implementing an effective OHSMS according to ISO 45001.

Or

(b) Explain the importance of an Occupational Health and Safety (OH&S) policy and its key components.

14. (a) Describe the general principles and guidelines for implementing an Environmental Management System (EMS) according to ISO 14001.

Or

(b) Explain the different levels of documentation required for an ISO 14001-based EMS.

15. (a) Discuss the stages involved in conducting a Life Cycle Assessment (LCA) and its applications in environmental management.

Or

(b) Explain the concept of eco-labeling and its role in promoting environmentally friendly products and consumer awareness.

Part C

(5 × 8 = 40)

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

16. (a) Discuss the importance of workplace inspections in identifying and controlling hazards, preventing accidents, and promoting a safe and healthy work environment.

Or

(b) Explain the process of conducting a workplace inspection, including planning, preparation, execution, reporting, and follow-up actions.

17. (a) Describe the different types of safety audits, their objectives, and the methodologies used to conduct them effectively.

Or

(b) Discuss the role of safety audits in evaluating the effectiveness of an organization's safety management system and driving continuous improvement.

18. (a) Explain the key clauses of ISO 45001, including leadership and commitment, OH&S policy, organizational roles and responsibilities, and consultation and participation of workers.

Or

(b) Discuss the benefits of implementing an OHSMS based on ISO 45001, such as reducing workplace accidents, improving employee well-being, and enhancing business reputation.

19. (a) Explain the key elements of an Environmental Management System (EMS) according to ISO 14001, including environmental policy, planning, implementation and operation, checking, and management review.

Or

(b) Discuss the process of implementing an EMS based on ISO 14001, from initial planning and assessment to certification and continual improvement.

20. (a) Describe the purpose, methodology, and benefits of conducting an Environmental Impact Assessment (EIA) for projects or activities that may have significant environmental impacts.

Or

(b) Discuss the different types of EIA, the content of an Environmental Impact Statement (EIS), and the role of EIA in environmental decision-making.

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C–8066	Sub. Code 30732

M.B.A. DEGREE EXAMINATION, APRIL 2026

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 body system is responsible for the movement of the body?

   (a) Nervous system

   (b) Circulatory system

   (c) Muscular system

   (d) Respiratory system

2. Which of the following is NOT a sense organ?

   (a) Eyes

   (b) Skin

   (c) Liver

   (d) Ears

3. Which type of hazard is associated with repetitive motions?

(a) Mechanical hazard

(b) Ergonomic hazard

(c) Psychological hazard

(d) Biological hazard

4. What is the purpose of local exhaust ventilation?

(a) To dilute contaminants in the entire workplace

(b) To remove contaminants at their source

(c) To provide fresh air for breathing

(d) To control temperature and humidity

5. Toxicology is the study of

(a) The adverse effects of chemicals on living organisms

(b) The beneficial effects of chemicals on living organisms

(c) The chemical composition of substances

(d) The physical properties of substances

6. Which route of entry involves a substance being absorbed through the skin?

(a) Inhalation

(b) Ingestion

(c) Dermal absorption

(d) Injection

7. Ergonomics focuses on

(a) Designing tools and workplaces to fit the worker

(b) Studying the effects of chemicals on the environment

(c) Analyzing accident statistics

(d) Developing safety regulations

8. Carpal Tunnel Syndrome is a disorder affecting the

(a) Back (b) Neck

(c) Wrist (d) Ankle

9. Air sampling is conducted to

(a) Measure the levels of contaminants in the air

(b) Assess noise levels

(c) Evaluate lighting conditions

(d) Monitor temperature

10. Biological monitoring involves

(a) Observing worker behavior

(b) Measuring contaminants or their metabolites in biological samples

(c) Conducting medical examinations

(d) All of the above

Part B (5 × 5 = 25)

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

11. (a) Describe the functions of the circulatory and respiratory systems in the human body.

Or

(b) Explain the role of the skin as a defense system.

12. (a) Discuss the different types of hazards and provide examples of each.

Or

(b) Explain the hierarchy of controls and how to select the most appropriate control measure for a given hazard.

13. (a) Define the terms "dose" and "response" in toxicology.

Or

(b) Explain the different classifications of toxic materials in the air.

14. (a) Discuss the factors that can affect the performance of physical tasks in the workplace.

Or

(b) Explain the ergonomic considerations for designing workstations and preventing musculoskeletal disorders (MSDs).

15. (a) Describe the different methods for sampling particulates, gases, and vapours in the air.

Or

(b) Explain the purpose and importance of health surveillance 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 skeleton and muscles.

Or

(b) Describe the role of the nervous system in controlling body functions.

17. (a) Discuss the hazards associated with noise and vibration, including their health effects and control measures.

Or

(b) Explain the different types of ionizing and non-ionizing radiation and their potential health effects.

18. (a) Discuss the stages involved in toxicological evaluation of a substance.

Or

(b) Explain the concept of exposure limits and the significance of ACGIH Threshold Limit Values (TLVs).

19. (a) Describe various ergonomic risk factors associated with manual handling tasks and explain how to assess and control these risks.

Or

(b) Discuss the causes, symptoms, and prevention of common work-related musculoskeletal disorders (MSDs).

20. (a) Explain the different types of biological monitoring tests used to assess worker exposure to hazardous substances, including urine, blood, and breath analysis.

Or

(b) Discuss the role of health surveillance in identifying early signs of occupational diseases and protecting worker health.

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C–8067	Sub. Code 30733

M.B.A. DEGREE EXAMINATION, APRIL 2026

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 factor influencing personality?

   (a) Heredity (b) Environment

   (c) Culture (d) Blood type

2. Organizational Behaviour Modification (OB Mod) focuses on

   (a) Changing employee attitudes

   (b) Improving employee skills

   (c) Modifying employee behaviour through reinforcement

   (d) Analysing organizational structures

3. Groupthink is a phenomenon where

(a) Group members conform to the majority opinion even if they disagree

(b) Group members generate creative ideas through brainstorming

(c) Group members make decisions based on rational analysis

(d) Group members effectively resolve conflicts

4. Which of the following is a benefit of behaviour-based safety (BBS)?

(a) Increased employee engagement in safety

(b) Improved hazard identification

(c) Reduced accident rates

(d) All of the above

5. Which of the following is NOT an ergonomic principle?

(a) Designing tasks to fit the worker's capabilities

(b) Minimizing physical and mental stress

(c) Maximizing productivity at all costs

(d) Promoting worker comfort and well-being

6. Motion economy aims to

(a) Reduce unnecessary movements and fatigue

(b) Increase the speed of work

(c) Maximize the use of machinery

(d) Reduce labour costs

7. Anthropometry is used to

(a) Analyze personality types

(b) Design workstations that fit the human body

(c) Assess environmental factors

(d) Evaluate safety training programs

8. What is the purpose of "workstation design"?

(a) To create a visually appealing workspace

(b) To maximize the use of space

(c) To optimize the work environment for comfort, efficiency, and safety

(d) To reduce the need for employee breaks

9. Which of the following is NOT a factor to consider in work surface design?

(a) Height of the work surface

(b) Reach distances

(c) Employee's favourite colour

(d) Availability of legroom

10. Effective work design can lead to

(a) Increased job satisfaction

(b) Reduced absenteeism

(c) Improved productivity

(d) All of the above

Part B (5 × 5 = 25)

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

11. (a) Explain the different types of learning theories and their implications for training and development.

Or

(b) Describe the components of attitudes and how they are formed.

12. (a) Discuss the advantages and disadvantages of group decision-making.

Or

(b) Explain the role of informal leaders in influencing group behaviour.

13. (a) Explain the process of integrating behavioural safety principles into an organization's existing safety management system.

Or

(b) Discuss the challenges and limitations of implementing behaviour-based safety programs.

14. (a) Describe the ergonomic considerations for the design and layout of electrical panels and switchgears.

Or

(b) Explain the relationship between fatigue, physical and mental strain and the incidence of accidents.

15. (a) Discuss the fundamental aspects of standing and sitting and their implications for work design.

Or

(b) Explain the importance of considering both effectiveness and cost-effectiveness in ergonomic design.

Part C ($5 \times 8 = 40$)

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

16. (a) Discuss the various theories of emotional intelligence and their relevance to workplace behaviour and performance.

Or

(b) Explain the concept of values and their influence on individual behavior in organizations.

17. (a) Describe the process of team building and the factors that contribute to effective teamwork.

Or

(b) Discuss the different types of communication in organizations and their impact on group dynamics.

18. (a) Explain the seven lessons from behaviour-based safety for increasing the use of personal protective equipment (PPE).

Or

(b) Discuss how to address ergonomic hazards through behaviour-based observation and feedback.

19. (a) Explain the principles of motion economy in detail and provide examples of their application in workplace design.

Or

(b) Discuss the physiological and psychological effects of fatigue and how to manage fatigue in the workplace.

20. (a) Describe the ergonomic guidelines for designing workstations for seated workers, including considerations for chair design, work surface height and visual displays.

Or

(b) Discuss the importance of designing workplaces that are inclusive and accessible to everyone, regardless of their physical abilities or limitations.

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C–8068

Sub. Code
30734

M.B.A. DEGREE EXAMINATION, APRIL 2026

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. Which of the following is NOT a stage in the oil and gas industry?

   (a) Upstream (b) Downstream

   (c) Midstream (d) Overstream

2. The "bathtub hazard curve" illustrates :

   (a) The likelihood of accidents in a bathtub

   (b) The risk of drowning in offshore operations

   (c) The changing risk of accidents over a product's lifecycle

   (d) The impact of human error on safety

3. HAZOP is a technique used for:

(a) Identifying root causes of accidents

(b) Analyzing hazards and operability problems

(c) Assessing safety training effectiveness

(d) Evaluating environmental impacts

4. Which of the following is a type of safety training?

(a) Toolbox talk

(b) On-the-job training

(c) Refresher training

(d) All of the above

5. Which organization regulates offshore safety in India?

(a) Directorate General of Mines Safety (DGMS)

(b) Directorate General of Shipping (DGS)

(c) Oil Industry Safety Directorate (OISD)

(d) Petroleum and Explosives Safety Organisation (PESO)

6. "Situation awareness" refers to :

(a) Being aware of one's surroundings and potential hazards

(b) Understanding safety regulation

(c) Knowing how to operate equipment

(d) Following emergency procedures

7. Which of the following is a human factor that can contribute to accidents?

(a) Fatigue (b) Stress

(c) Complacency (d) All of the above

8. A common hazard in the oil and gas industry is :

(a) Exposure to radiation

(b) Slips, trips, and falls

(c) Fires and explosions

(d) Ergonomic strain

9. What is a confined space?

(a) Any enclosed area

(b) An area with limited access and egress that may contain hazardous atmospheres

(c) A small office cubicle

(d) A storage room

10. Which of the following is a precaution for working at height?

(a) Using fall protection equipment

(b) Ensuring proper access and egress

(c) Conducting risk assessments

(d) All of the above

Part B (5 × 5 = 25)

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

11. (a) Explain the different stages of the oil and gas industry (upstream, midstream, downstream) and their associated safety challenges.

Or

(b) Discuss the concept of the "accident causation theory" and its relevance to safety management.

12. (a) Describe the process of conducting a HAZOP study and its benefits in identifying potential hazards.

Or

(b) Explain the purpose and importance of different types of safety training in the oil and gas industry.

13. (a) Discuss the consequences of not following safety regulations in the offshore oil and gas industry.

Or

(b) Explain the importance of regular inspection and maintenance of machinery in offshore operations.

14. (a) Describe the various human factors that can contribute to accidents in the oil and gas industry.

Or

(b) Explain the role of organizational factors in influencing safety performance.

15. (a) Discuss the hazards associated with lifting operations and the control measures to mitigate these hazards.

Or

(b) Explain the importance of proper storage and handling of flammable liquids in the oil and gas industry.

Part C (5 × 8 = 40)

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

16. (a) Discuss the common causes of work-related injuries in the oil and gas industry and explain how to prevent them.

Or

(b) Explain the differences in safety considerations between onshore and offshore operations in the oil and gas industry.

17. (a) Describe the various safety analysis methods used in the oil and gas industry, including root cause analysis, job safety analysis, and fault tree analysis.

Or

(b) Explain the concept of reliability analysis and its application in assessing the safety of critical systems in the oil and gas industry.

18. (a) Discuss the accident reporting procedures in the offshore oil and gas industry and their importance in learning from incidents and preventing recurrence.

Or

(b) Analyse the causes and consequences of a specific offshore oil and gas industry accident case study (e.g., Mumbai High North Platform, Piper Alpha).

19. (a) Explain the different factors that contribute to oil and gas industry accidents, including human factors, organizational factors, and environmental factors.

Or

(b) Discuss the recommendations for reducing fatal accidents in the oil and gas industry.

20. (a) Describe the hazards associated with confined spaces and explain the requirements for ventilation and gas testing before entry.

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–8069

Sub. Code
30735

M.B.A. DEGREE EXAMINATION, APRIL 2026

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. Plant layout design should prioritize :

   (a) Aesthetics over functionality

   (b) Cost reduction over safety

   (c) Worker safety and efficiency

   (d) Minimizing environmental impact

2. Which of the following is NOT a key element of a safe plant layout?

   (a) Clear and accessible walkways

   (b) Adequate lighting

   (c) Overcrowded workspaces

   (d) Proper ventilation

3. When selecting a plant location, it is important to consider :

(a) Proximity to raw materials and markets

(b) Availability of infrastructure (water, electricity, transportation)

(c) Environmental regulations and impact

(d) All of the above

4. Which NDT method uses X-rays or gamma rays to inspect the internal structure of materials?

(a) Ultrasonic testing

(b) Magnetic particle testing

(c) Radiography

(d) Dye penetrant testing

5. CORELAP is a computerized layout planning tool that focuses on :

(a) Analyzing the relationship between departments and work areas

(b) Evaluating the environmental impact of the layout

(c) Assessing the ergonomic aspects of the layout

(d) Optimizing material flow

6. TQM stands for :

(a) Total Quality Management

(b) Transportation Queue Management

(c) Technical Quality Measurement

(d) Training and Qualification Matrix

7. Which type of ventilation is commonly used to control dust and fumes in industrial settings?

(a) General ventilation

(b) Local exhaust ventilation

(c) Natural ventilation

(d) Air conditioning

8. Poor housekeeping can lead to :

(a) Increased risk of slips, trips, and falls

(b) Fire hazards

(c) Reduced productivity

(d) All of the above

9. What is the purpose of a crane in material handling?

(a) To transport materials over long distances

(b) To lift and move heavy loads

(c) To store materials

(d) To package materials

10. Ergonomic considerations in material handling aim to :

(a) Reduce worker fatigue and discomfort

(b) Prevent musculoskeletal disorders

(c) Improve productivity

(d) All of the above

Part B (5 × 5 = 25)

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

11. (a) Discuss the safety considerations for designing and locating fire protection systems in a plant layout.

Or

(b) Explain the importance of considering waste disposal and treatment facilities in plant layout design.

12. (a) Describe the factors to consider when selecting a plant location in relation to environmental impact and sustainability.

Or

(b) Explain the purpose and limitations of different Non-Destructive Testing (NDT) methods used in plant inspection.

13. (a) Discuss the benefits and challenges of implementing Just-In-Time (JIT) manufacturing systems.

Or

(b) Explain the concept of Total Quality Management (TQM) and its role in improving product quality and customer satisfaction.

14. (a) Describe the principles of good illumination.

Or

(b) Discuss the importance of preventive maintenance in ensuring the safe and efficient operation of plant equipment and machinery.

15. (a) Explain the safety precautions and procedures for cranes.

Or

(b) Discuss the ergonomic considerations for selecting and using forklifts.

Part C $(5 \times 8 = 40)$

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

16. (a) Discuss the safety considerations for plant layout design in industries with specific hazards and explosives manufacturing.

Or

(b) Explain the importance of fire suppression systems and alarms, into plant layout design.

17. (a) Describe the process of conducting a thorough plant inspection, including the use of NDT methods and checklists.

Or

(b) Discuss the safety considerations for storing and handling hazardous materials in a plant.

18. (a) Explain the concept of "unit load" and its role in optimizing material handling and storage operations.

Or

(b) Discuss the different types of conveyors and their applications in various industries.

19. (a) Explain the principles of 5S and discuss its benefits in improving workplace organization, efficiency and safety.

Or

(b) Discuss the role of housekeeping in preventing accidents and promoting a clean and orderly work environment.

20. (a) Describe the different types of ropesand slings used in material handling and explain their safe selection, use, and inspection procedures.

Or

(b) Discuss the ergonomic factors to consider when designing workstations and tasks to minimize the risk of musculoskeletal disorders (MSDs) and other work-related injuries.

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C–8070	Sub. Code
	30736A/ 70136A

M.B.A./M.Sc. DEGREE EXAMINATION, APRIL 2026

Third Semester

SAFETY MANAGEMENT SYSTEM

(Common for M.B.A. Environment and Industrial Safety/ M.Sc. Industrial Safety & Hygiene)

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. What is the primary purpose of OSHAS 18001?

   (a) To provide a framework for environmental management

   (b) To promote occupational health and safety management systems

   (c) To ensure product quality

   (d) To regulate financial reporting

2. Which of the following is NOT a principle of accident prevention?

   (a) Hazard identification and control

   (b) Risk assessment

   (c) Ignoring near-miss incidents

   (d) Employee training

3. A safety policy should :

(a) Be written in complex legal language

(b) Be clearly communicated to all employees

(c) Remain confidential to management

(d) Be updated only after an accident

4. Which of the following is a function of a safety department?

(a) Conducting safety inspections

(b) Investigating accidents

(c) Developing safety training programs

(d) All of the above

5. "Manageable communication" in safety refers to:

(a) Controlling the flow of information to prevent panic

(b) Using clear and concise language that is easy to understand

(c) Restricting communication to management only

(d) Ignoring employee feedback

6. Which training method involves providing instruction directly at the worksite?

(a) E-Learning

(b) Classroom training

(c) On-the-job training

(d) Seminars

7. Training needs assessment is conducted to:

(a) Identify the training requirements of employees

(b) Evaluate the effectiveness of training programs

(c) Reduce training costs

(d) Comply with legal requirements

8. Which of the following is NOT a method for promoting employee participation in safety?

(a) Safety suggestion schemes

(b) Disciplinary action for unsafe behavior

(c) Safety committees

(d) Safety competitions

9. "Behavioral safety" focuses on :

(a) Analyzing personality types

(b) Improving workplace ergonomics

(c) Modifying employee behavior to reduce risks

(d) Conducting safety audits

10. Which of the following can influence an individual's perception of risk?

(a) Past experiences

(b) Personality traits

(c) Social norms

(d) All of the above

Part B (5 × 5 = 25)

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

11. (a) Explain the different models of accident prevention and their key principles.

Or

(b) Discuss the direct and indirect costs of accidents and their impact on an organization.

12. (a) Describe the process of strategic planning for safety and its role in achieving organizational safety goals.

Or

(b) Explain the importance of effective communication in promoting safety and preventing accidents.

13. (a) Discuss the different types of safety training programs and their target audiences.

Or

(b) Explain the role of training in integrating safety into operating procedures and job instructions.

14. (a) Describe the role of trade unions in promoting workplace safety and health.

Or

(b) Explain the concept of safety committees and their functions in enhancing employee participation.

15. (a) Discuss the human factors that contribute to accidents, including psychological and behavioral factors.

Or

(b) Explain the importance of motivation in achieving safe work behavior and describe different motivational techniques.

Part C $(5 \times 8 = 40)$

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

16. (a) Discuss the role of management in promoting industrial safety and explain the key principles and practices of effective safety leadership.

Or

(b) Explain the concept of a Management Information System (MIS) for safety, health, and environment (SHE) and discuss its role in collecting, compiling, and analyzing SHE data.

17. (a) Describe the different types of safety plans and explain the process of implementing a safety plan in an organization.

Or

(b) Discuss the authority, power, and qualifications of a safety officer and their role in promoting workplace safety.

18. (a) Explain the importance of needs assessment in designing and developing effective safety training programs.

Or

(b) Discuss the benefits and challenges of using modern training methods, such as e-learning and simulations, in safety education.

19. (a) Discuss the various safety incentive schemes and their effectiveness in promoting safe behavior. Analyze the potential advantages and disadvantages of using such schemes.

Or

(b) Explain the different methods and techniques used for safety promotion, including posters, slogans, campaigns, and competitions.

20. (a) Discuss the concept of safety culture and its key components. Explain how to assess and improve safety culture within an organization.

Or

(b) Explain the ethical issues related to safety management, such as conflicts of interest, whistle blowing and the responsibility to protect worker health and safety.

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C–8071

Sub. Code
30736C

M.B.A. DEGREE EXAMINATION, APRIL 2026

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 NOT a component of disaster risk?

   (a) Hazard (b) Vulnerability

   (c) Capacity (d) Profit

2. "A landslide is an example of a :

   (a) Man-made disaster

   (b) Natural disaster

   (c) Technological disaster

   (d) Social disaster

3. What is the purpose of disaster preparedness?

   (a) To prevent disasters from happening

   (b) To minimize the impact of disasters

   (c) To respond to disasters effectively

   (d) To rebuild after disasters

4. Which stage of the disaster cycle focuses on long-term rebuilding and rehabilitation?

(a) Response (b) Recovery

(c) Mitigation (d) Preparedness

5. Which of the following is a structural measure for disaster mitigation?

(a) Building codes and regulations

(b) Early warning systems

(c) Evacuation planning

(d) Public awareness campaigns

6. Retrofitting refers to :

(a) Constructing new buildings

(b) Demolishing old buildings

(c) Modifying existing buildings to improve their resistance to disasters

(d) Relocating communities away from hazard zones

7. What is the purpose of a disaster awareness program?

(a) To educate the public about disaster risks

(b) To train emergency responders

(c) To conduct scientific research on disasters

(d) To provide financial assistance to disaster victims

8. Remote sensing is a technology used for :

(a) Predicting earthquakes

(b) Monitoring weather patterns

(c) Assessing damage after a disaster

(d) All of the above

9. Which UN agency provides humanitarian assistance and disaster relief?

(a) UNDP (b) UNDRR

(c) WHO (d) WFP

10. What is a disaster mitigation fund?

(a) A financial resource for supporting disaster preparedness and mitigation activities

(b) An insurance policy for individuals affected by disasters

(c) A fund for compensating businesses for losses due to disasters

(d) A fund for research and development in disaster management

Part B

$(5 \times 5 = 25)$

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

11. (a) Explain the different types of disasters, providing examples of each.

Or

(b) Discuss the factors that contribute to vulnerability in the context of disasters.

12. (a) Describe the key components of a disaster management plan.

Or

(b) Explain the importance of community participation in disaster management.

13. (a) Discuss the different disaster mitigation techniques, including structural and non-structural measures.

Or

(b) Explain the role of early warning systems in reducing the impact of disasters.

14. (a) Describe the methods used for training and educating people about disaster preparedness.

Or

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

15. (a) Discuss the disaster management framework in India, including the roles and responsibilities of different agencies and institutions.

Or

(b) Explain the importance of disaster mitigation funds in supporting disaster preparedness and response activities.

Part C

(5 × 8 = 40)

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

16. (a) Discuss the global climate extremes and their potential impact on communities and the environment.

Or

(b) Explain the causes and consequences of various natural disasters, such as earthquakes, floods, and cyclones.

17. (a) Describe the concept of crisis management and its role in responding to disasters effectively.

Or

(b) Explain the importance of collaboration and coordination among different agencies and stakeholders in disaster management.

18. (a) Discuss the building design and construction techniques that can help mitigate the impact of earthquakes and other disasters.

Or

(b) Explain the process of retrofitting existing buildings to improve their resilience to disasters.

19. (a) Discuss the role of awareness programs and education in promoting disaster preparedness and risk reduction.

Or

(b) Explain the process of conducting a disaster risk assessment and developing a comprehensive disaster preparedness plan for a specific community or region.

20. (a) Describe the disaster management mechanisms and initiatives of the United Nations and its specialized agencies.

Or

(b) Discuss the challenges and opportunities for strengthening disaster management policies and practices in India.

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C–8072

Sub. Code
30737/70137

M.B.A./M.Sc. DEGREE EXAMINATION, APRIL 2026

Third Semester

FOOD HYGIENE AND SANITATION (HACCP)

(Common for M.B.A. (Environment & Industrial Safety)/ M.Sc. (Industrial Safety & Hygiene))

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. What Indian agency oversees urban development and food infrastructure?

   (a) UDA (b) GAP

   (c) AGMARK (d) Certification

2. What U.S. agency regulates food and drug safety?

   (a) BRC (b) FAO

   (c) WHO (d) FDA

3. What global certification is awarded to ensure food product safety and integrity?

   (a) ISI (b) BRC

   (c) FAO (d) Labelling

4. What UN body promotes global public health and food standards?

(a) GVP (b) FDA

(c) AGMARK (d) WHO

5. What UN agency supports agricultural development and food nutrition?

(a) FAO (b) SPS and TBT

(c) Risk assessment (d) UDA

6. What certification label signifies government-approved food quality in India?

(a) AGMARK (b) ISI

(c) GVP (d) WHO

7. What mark indicates product compliance with Indian standards?

(a) UDA (b) ISI

(c) Labelling (d) GAP

8. What provides consumers with key food product details and ingredients?

(a) HACCAP (b) TQM

(c) Certification (d) Labelling

9. What defines the measurable characteristics required in food products?

(a) Specifications (b) Control

(c) Risk assessment (d) WHO

10. What validates food safety processes and product quality officially?

(a) GVP (b) BRC

(c) Certifications (d) UDA

Part B (5 × 5 = 25)

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

11. (a) List the objectives of quality control.

Or

(b) Mention the factors that influence the quality of the food.

12. (a) What are all the physical factors contributing to contaminating the food chain?

Or

(b) Define sanitation and shortly discuss the pest control methods.

13. (a) Enumerate the following : (i) GAP, (ii) GMP.

Or

(b) Write short notes on Risk management.

14. (a) State the role of national regulatory agencies.

Or

(b) Criticize the following :

(i) USDA, (ii) FAO

15. (a) Write short notes on food product recall.

Or

(b) What are all export control systems?

Part C

(5 × 8 = 40)

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

16. (a) Explore the quality assessment methods of fruits and cereals.

Or

(b) Briefly discuss the methods adopted to determine the quality in the food industry.

17. (a) Elaborately discuss the regulation of food sanitation and state the significance of food sanitation.

Or

(b) Explain in detail about the cleaning compounds.

18. (a) Describe the following : (i) TQM (ii) GMP.

Or

(b) Briefly discuss the current challenges in food safety.

19. (a) Elaborately discuss the FSSAI and PFA.

Or

(b) Explain in detail about the ISO 9000 & ISO 14000 standards for food quality and safety.

20. (a) Briefly discuss about the food alerts and food product recalls.

Or

(b) Explain the packaging and labelling methods with a suitable example.

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