C–5127	Sub. Code
	30711

M.B.A. DEGREE EXAMINATION, APRIL 2025

First Semester

Environment and Industrial Safety

FIRE PREVENTION AND PROTECTION

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Section A (10 × 1 = 10)

Answer **all** questions.

1. What does the RACE acronym stand for in a fire emergency?

   (a) Rescue, Assess, Contain, Evacuate

   (b) Report, Alarm, Control, Extinguish

   (c) Run, Avoid, Cover, Escape

   (d) Reach, Analyze, Cooperate, Engage

2. What is the purpose of fire resistant door?

   (a) Enhance building aesthetics

   (b) Provide sound proofing

   (c) Allow quick evacuation

   (d) Delay the spread of fire

3. Which of the following is a hazard associated with overloaded electrical outlets?

(a) Increased energy efficiency

(b) Decreased risk of electrical fires

(c) Power surge protection

(d) Fire risk

4. Which of the following is a suitable material for a fire extinguisher sign?

(a) Paper

(b) Plastic

(c) Wood

(d) Metal

5. What should you do if a fire exit is blocked during an evacuation?

(a) Proceed to another exit

(b) Wait for assistance

(c) Attempt to clear the obstruction

(d) Take a different route

6. Which of the following is an example of passive fire protection?

(a) Fire extinguisher

(b) Fire alarm

(c) Fire proof clothing

(d) Fire resistant wall

7. What is the purpose of a fire safety audit?

   (a) Verify compliance with regulations

   (b) Test the efficiency of fire hydrants

   (c) Identify potential arsonists

   (d) Evaluate emergency response time

8. Which of the following should be included in a home fire escape plan?

   (a) Multiple escape routes

   (b) Flammable decorations

   (c) Open windows for ventilation

   (d) Candles for emergency lighting

9. What is the primary function of a fire sprinkler system?

   (a) Detect smoke and sound an alarm

   (b) Extinguish fires automatically

   (c) Provide emergency lighting

   (d) Block the spread of smoke

10. What is the recommend distance between portable heaters and flammable materials?

    (a) 5 feet

    (b) 2 inches

    (c) 10 feet

    (d) Touching distance

Section B (5 × 5 = 25)

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

11. (a) Define Flash Point. And briefly discuss the extinguish Methods.

Or

(b) Briefly discuss the methods of controlling fire in public places.

12. (a) Explore the size and number of fire extinguishers.

Or

(b) Explain the inspection and maintenance of fire extinguishers.

13. (a) Write the need for and importance of fire detectors and explain with one examples.

Or

(b) What is an IR flame detector? Discuss its purpose and applications.

14. (a) Explore the installation and maintenance of terrace tanks.

Or

(b) What is a hose reel? Briefly discuss its handling methods and uses.

15. (a) Shortly, discuss the fire escape and staircase.

Or

(b) Describe in detail about special hazards.

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

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

16. (a) Write short notes on Auto Ignition Temperature.

Or

(b) Describe the Fire Triangle with relevant information.

17. (a) Explain the standard testing method of fire extinguishers.

Or

(b) How to select the fire extinguisher's location and briefly discuss its initial inspection and installation?

18. (a) What is UV? Briefly discuss the UV flame detectors and their applications.

Or

(b) Define detection zone. Describe in detail the fire prevention and protection system.

19. (a) Explain - fire service inlet system with the necessary information.

Or

(b) Explore the maintenance and installation of internal fire hydrants.

20. (a) Briefly discuss the precaution steps and special hazard precaution steps.

Or

(b) Differentiate upper and lower explosive limits and briefly discuss them.

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C–5128	Sub. Code
	30712

M.B.A. DEGREE EXAMINATION, APRIL 2025

First Semester

Environment and Industrial Safety

ORGANIZATIONAL BEHAVIOUR

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Contribution/s of the human relations movement is/are
   (a) Great Depression
   (b) Labour Movement
   (c) Hawthorne Studies
   (d) All of these
2. Edward Tolman is related to
   (a) Behaviourist Framework
   (b) Cognitive Approach
   (c) Social Cognitive Framework
   (d) None of these
3. Forces affecting organizational behaviour are
   (a) People (b) Environment
   (c) Technology (d) All of the above

4. Hawthorne Studies is related to the evolution of organizational behaviour.

   (a) Industrial Revolution

   (b) Scientific Management

   (c) Organizational behaviour

   (d) Human relations movement

5. In the present context, challenges for OB are

   (a) Employee expectation

   (b) Workforce diversity

   (c) Globalization

   (d) All of the above

6. Meso organization behaviour is related with

   (a) Individual behaviour

   (b) Group behaviour

   (c) Organizational behaviour

   (d) None of these

7. "Leadership motivates the people to work and not the power of money." This concept is related to

   (a) Autocratic model

   (b) Custodial model

   (c) Supportive Model

   (d) Collegial Model

8. Organizational behaviour is a field of study backed by a body associated with growing concern for people in the workplace.

   (a) Theory (b) Research

   (c) Application (d) All of the above

9. Organizational behaviour is

(a) A science

(b) An art

(c) A science as well as an art

(d) None of the above

10. The term 'psychology' is derived from the word 'psyche', which means 'soul' or 'spirit'.

(a) Latin (b) French

(c) Greek (d) None of these

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

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

11. (a) Briefly discuss Fayol's principles of management.

Or

(b) Explain the decision-making methods using relevant data.

12. (a) Describe the characteristics of leadership.

Or

(b) Explore the ethical responsibilities of management.

13. (a) State the functions of the controller and discuss the control elements.

Or

(b) Write short notes on effective control systems.

14. (a) Explain the scope and elements of organizational behaviour.

Or

(b) What is an effective group? And explore the stages of conflict.

15. (a) Shortly discuss about coping strategies for stress.

Or

(b) Explain the need for and importance of international organizational behavior.

Part C (5 × 8 = 40)

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

16. (a) What are all the management theories? Discuss any theory with relevant data.

Or

(b) Explore the planning steps and merits and discuss the need for and importance of management.

17. (a) Distinguish centralization and decentralization and briefly discuss about it.

Or

(b) Briefly discuss the 10 commandments of corporate social responsibilities.

18. (a) Define controlling and explain in detail about the techniques of control.

Or

(b) Explore the role of global managers.

19. (a) Classify groups and briefly discuss the functions of the group.

Or

(b) Explain – Hersey – Blanchard's situational theory.

20. (a) Briefly discuss the approaches to effectiveness and work stress.

Or

(b) What is culture stock? And explain in detail the organization's structure across cultures.

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C–5129	Sub. Code
	30713

M.B.A. DEGREE EXAMINATION, APRIL 2025

First Semester

Environment and Industrial Safety

INDUSTRIAL SAFETY MANAGEMENT

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. The following is (are) used as safety devices (s) in machines.

   (a) Fail safe (b) Safety interlocks

   (c) Limit switches (d) All of the above

2. Class-A fire consists of fire due to

   (a) Wood (b) Oil

   (c) Transformer (d) Chemical

3. Water is used to extinguish.

   (a) Class-A fires (b) Class-B fires

   (c) Class-C fires (d) All of the above

4. The following class of fire occur in electrical equipment.

   (a) Class-A fires (b) Class-B fires

   (c) Class-C fires (d) All of the above

5. The following extinguisher is suitable for cotton or other textile fires.

(a) Water (b) Soda acid

(c) Foam (d) Dry chemical

6. ———— is best suited to extinguishing oil or flammable liquid fire.

(a) Soda acid (b) Vaporizing

(c) Foam (d) Dry Chemical

7. Which of the following is(are) physical hazard agent(s)?

(a) Falls (b) Electricity

(c) Inhalation (d) All of these

8. Which of the following is/are used for Safety and/or health sign.

(a) Signboard (b) A colour

(c) Acoustic signal (d) All of these

9. Which colour is used to indicate the Warning sign?

(a) Blue (b) Green

(c) Blue (d) Yellow

10. Minimum Clearance provided between phases in the air for the 11 kV system is ———— mm.

(a) 140 (b) 175

(c) 229 (d) 178

Part B (5 × 5 = 25)

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

11. (a) What is conduction, convection, and radiation? Shortly, discuss the heat transfer modes.

Or

(b) Define flash point. And shortly discuss auto-ignition temperature.

12. (a) Name the parts of the safety helmet and discuss each part.

Or

(b) Explore the operating methods of fire extinguishers.

13. (a) What are all the emergency measures that need to be followed in Industrial Safety?

Or

(b) Define safety shoe. And explain the need for an importance of safety shoes in the Industry.

14. (a) List the types of detectors and briefly discuss about smoke detectors.

Or

(b) Name the types of the body suit and briefly discuss about it.

15. (a) How to do respiratory protection? Differentiate smoke and fumes.

Or

(b) Shortly discuss about self contained breathing apparatus.

Part C (5 × 8 = 40)

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

16. (a) Briefly discuss about the class of fire.

Or

(b) What is an accident and incident, and briefly discuss the accident and risk.

17. (a) Explain in detail about the head protection methods and their importance.

Or

(b) Classify fire and explain halogenate agents in detail.

18. (a) List and explain the types of hand protection methods in the industry to ensure Safety.

Or

(b) Briefly discuss about the water flow alarm.

19. (a) Why do we need to change clothes often? And discuss the preventive measures.

Or

(b) Explain in detail the power supplies for alarm systems and maintenance procedures.

20. (a) How do you get rid of harmful contaminants? And briefly discuss about gases and vapours.

Or

(b) Describe in detail the storage and transportation methods of combustible liquids.

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	30714

M.B.A. DEGREE EXAMINATION, APRIL 2025

First Semester

Environment and Industrial Safety

SAFETY MANAGEMENT IN CONSTRUCTIONAL SECTOR

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. The Act, which specifically includes construction activities within its jurisdiction, is

   (a) Payment of Wages Act -1936

   (b) Minimum Wages Act - 1948

   (c) Workmen's Compensation Act-1923

   (d) Trade Union Act -1926

2. The activity with minimum ———— should be crashed first.

   (a) Cost Index (b) Cost Slope

   (c) Crash Cost (d) Normal Cost

3. The minimum height of work where scaffolding is to be used is ———— m

   (a) 1 (b) 1.8

   (c) 1.2 (d) 0.5

4. Which of the following types of organization is also known as a military organization?

(a) Line and Staff Organization

(b) Functional Organization

(c) Horizontal Organization

(d) Line Organization

5. What is the primary role of a concrete inspector during concrete operations?

(a) Placing concrete

(b) Monitoring and ensuring quality

(c) Curing concrete

(d) Mixing concrete

6. Which of the following contract types is usually followed by the Railway Department for construction purposes?

(a) Item rate (b) Piece work

(c) Percentage rate (d) Lump-sum

7. What year was OSHA established?

(a) 1926 (b) 1884

(c) 1945 (d) 1970

8. How soon do we need to notify OSHA after we have a recordable injury?

(a) 2 Hours

(b) 4 Hours

(c) 24 Hour

(d) We do not have to notify OSHA

9. What is the number for the Construction Safety Standards?

(a) CFR-29 (b) 1927

(c) 1926 (d) CFR-32

10. What is the most cited violation within construction during the year 2003?

(a) Scaffolds (b) Excavations

(c) Electrical (d) Fall Protection

Part B (5 × 5 = 25)

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

11. (a) Explain the types and causes of accidents related to various construction activities.

Or

(b) Explore the need for and importance of safety education.

12. (a) Shortly discuss about trenches and wide excavation.

Or

(b) What are all the essential prevention steps that need to be followed when working on contaminated sites?

13. (a) Briefly discuss the safe use of ladders when working at heights.

Or

(b) Describe in detail a safe monitoring system.

14. (a) Explain in detail about the inspection and testing methods of tower cranes.

Or

(b) Define welding and explore the benefits of welding machinery in the construction industry.

15. (a) Keys to safe demolition – discuss shortly.

Or

(b) Explain in detail about pre survey inspection.

Part C (5 × 8 = 40)

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

16. (a) Briefly discuss the problems impeding safety in the construction industry.

Or

(b) Describe in detail about the essentials of preconstruction meetings and quality assurance in construction.

17. (a) What is blasting? Explain in detail about the pre blast and post blast inspection.

Or

(b) Explore the road works safety and elaborately discuss the causes and prevention methods.

18. (a) Briefly discuss fall protection in construction OSHA 3146 with one example.

Or

(b) Describe in detail about control access zones and height passes.

19. (a) Explain the following:

(i) dozers and

(ii) concrete pumps.

Or

(b) Explain in detail about manual handling and manual handling scaffolding in construction.

20. (a) Elaborately discuss first aid and fire hazards and methods for preventing them.

Or

(b) Express your personal experience about anyone's interesting experiences at the construction site against the fire accidents.

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C–5131	Sub. Code
	30715

M.B.A. DEGREE EXAMINATION, APRIL 2025

First Semester

Environment and Industrial Safety

ENVIRONMENTAL STUDIES

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Which is a renewable energy source?

   (a) Nuclear (b) Coal

   (c) Natural gas (d) Wind Energy

2. What is the primary cause of global warming?

   (a) Deforestation

   (b) Greenhouse gas emissions

   (c) Volcanic eruptions

   (d) Ocean currents

3. What is the main component of the Earth's atmosphere?

   (a) Nitrogen (b) Carbon dioxide

   (c) Oxygen (d) Argon

4. Which of the following is a greenhouse gas?

   (a) Oxygen (b) Nitrogen

   (c) Carbon dioxide (d) Helium

5. What is the process by which plants make their food?

(a) Respiration (b) Photosynthesis

(c) Fermentation (d) Combustion

6. Which type of pollution is caused by the excessive use of fertilizers and pesticides in agriculture?

(a) Air pollution

(b) Noise pollution

(c) Water pollution

(d) Light pollution

7. What is the main cause of ozone depletion in the Earth's atmosphere?

(a) Carbon dioxide emissions

(b) Chlorofluoro carbons (CFCs)

(c) Methane emissions

(d) Nitrous oxide emissions

8. Which of the following is a non-renewable resource?

(a) Solar energy (b) Wind energy

(c) Biomass (d) Coal

9. What is the primary source of energy for most living organisms?

(a) Wind (b) Sun

(c) Geothermal (d) Nuclear fusion

10. What is the term for the variety of life on Earth, including plants, animals, and microorganisms?

(a) Ecosystem (b) Habitat

(c) Biodiversity (d) Trophic level

Part B (5 × 5 = 25)

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

11. (a) Elaborately discuss the scope of environmental studies.

Or

(b) Shortly, discuss the segments of the environment.

12. (a) Explain timber extraction and its effects.

Or

(b) What is water logging? And briefly discuss the effects of modern agriculture.

13. (a) Enumerate the concept and function of an Ecosystem.

Or

(b) Briefly discuss about the hotspots of biodiversity.

14. (a) Explain the control measures of soil pollution.

Or

(b) List the causes and effects of air pollution.

15. (a) Name the visited places and explore the pollution type and its effects.

Or

(b) Briefly discuss the observation about common birds.

Part C (5 × 8 = 40)

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

16. (a) Explore the need for and importance of the multidisciplinary nature of environmental studies.

Or

(b) List the benefits of environmental studies.

17. (a) Briefly discuss about deforestation with one case study.

Or

(b) What are mineral resources? Describe in detail the experimental effects of extracting it.

18. (a) Explore the energy flow in the ecosystem.

Or

(b) Briefly discuss the in-situ and ex-situ conversation on biodiversity.

19. (a) Explore the causes and effects of water pollution and its control measures.

Or

(b) Describe thermal pollution and explain the causes and control measures of thermal pollution.

20. (a) Why do we need mountain field work and to explore the knowledge you have gathered?

Or

(b) How many locally polluted sites have you visited in rural areas? Explore the experience.

———————

C–5132	Sub. Code
	30716A

M.B.A. DEGREE EXAMINATION, APRIL 2025

First Semester

Environment and Industrial Safety

SAFETY IN PROCESS INDUSTRIES

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Which of the following Systems provides feedback for the improvement or correction to be made in the system?

   (a) Open System (b) Close System

   (c) Open loop System (d) Close loop System

2. Which of the following systems provides an accurate measurement of the external factors that affect the working of the system?

   (a) Deterministic system

   (b) Probalistic system

   (c) Production system

   (d) Non production system

3. Which of the following Organization structures provides Unity of Command in its working process?

   (a) Functional (b) Line

   (c) Line and Staff (d) Committee

4. Which of the following Organization structure is formed by a group of individuals that suggest solutions to the critical problems of the organization?

(a) Committee (b) Functional

(c) Matrix (d) Line

5. Which of the following is an Organization principle?

(a) Division of labour

(b) Scalar Chain

(c) Functional process

(d) All of the above

6. What is a span of Control?

(a) No of subordinates under one superior

(b) Span of Superior

(c) Authority level

(d) No superiors

7. S. W. L. means?

(a) Safe working load

(b) Standard working load

(c) Side working load

(d) Stable working load

8. Which is known as corrective maintenance?

(a) Breakdown maintenance

(b) Predictive maintenance

(c) Preventive maintenance

(d) Scheduled maintenance

9. ———————— maintenance is regular period planned maintenance, which eliminates breakdowns and outages.

(a) Routine (b) Preventive

(c) Corrective (d) Operation

10. With the increase in the cost of preventive maintenance, the breakdown maintenance cost will

(a) Decreases (b) Increases at a faster rate

(c) No change (d) Increases

Part B (5 × 5 = 25)

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

11. (a) What is reactor safety? And briefly discuss the assessment methods.

Or

(b) Shortly discuss about the flare and vent system.

12. (a) Explain the phases of commissioning.

Or

(b) Why do we need to do pressure testing and leak testing and state the importance of it?

13. (a) Explain the start-up operation using the necessary information.

Or

(b) Describe the need for and importance of color coding of cylinders.

14. (a) How do you perform the maintenance for equipment? Briefly discuss the steps.

Or

(b) Describe in detail the onsite emergency.

15. (a) Write short notes on the storage layout.

Or

(b) Briefly discuss the fire prevention and protection methods.

Part C (5 × 8 = 40)

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

16. (a) Describe in detail about the design of pressure vessels.

Or

(b) What are all the failures in the pressure system? Discuss about it.

17. (a) Explain the following: (i) plant monitoring and (ii) performance monitoring.

Or

(b) Briefly discuss the process of commissioning

18. (a) What is the permit system? Briefly discuss it.

Or

(b) Explain the need for and importance of trip systems.

19. (a) What is purging? Briefly discuss the repair and demolition.

Or

(b) Explain disaster planning with the required information.

20. (a) Briefly discuss the loading and unloading facilities in process industries.

Or

(b) Define LPG. And briefly discuss the storage and handling of LPG.

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C–5133	Sub. Code
	30716B

M.B.A. DEGREE EXAMINATION, APRIL 2025

First Semester

Environment and Industrial Safety

WORK STUDY AND ERGONOMIC

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the questions.

1. For controlling the rotation through more than 360 degrees, we use

   (a) Knob (b) Selector

   (c) Crank (d) Wheel

2. If natural light is used as the principal means of illumination in the workspace, the windows area needs to be equal to _____ percent of the floor area.

   (a) 20 (b) 30

   (c) 40 (d) 50

3. When typing, your wrists should remain _____.

   (a) Twisted (b) Straight

   (c) Bent (d) Motionless

4. What angle should your arms be bent to the keyboard safely and comfortably?

   (a) 180 (b) 90

   (c) 45 (d) 0

5. Repetitive motion injuries are caused by _____ exposure to a combination of factors.

(a) Short term (b) Intermittent

(c) Prolonged (d) Immediate

6. Most RMIs occur to the _____.

(a) Upper extremities (b) Back

(c) Neck (d) All of the above

7. Which design consideration does not apply to motorcycle helmets?

(a) Range of size

(b) Adjustability

(c) Suitable for 50^{th} percentile

(d) Safety

8. What needs to be considered when designing the controls of a car?

I. Psychological factors

II. Physiological factors

III. Anthropometric factors

(a) I only (b) II only

(c) I and II (d) I, II and III

9. Which group has the most control over the planned obsolescence of a product?

(a) Legislators (b) Manufacturers

(c) Consumers (d) Designers

10. Which adult percentile would most likely be used to decide the minimum height for the ceiling of a room?

(a) 99 (b) 75

(c) 50 (d) 4

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

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

11. (a) Explore the work procedure with the necessary information.

Or

(b) Explain in detail the robotic concepts in the work study.

12. (a) Briefly discuss the principles of motion economy.

Or

(b) Write short notes on the physical strain and discuss the reducing methods of it.

13. (a) List the needs and uses of invisible protective barriers.

Or

(b) Investigate the ergonomics in the design of PPE equipment.

14. (a) Mention the safety methods and briefly discuss them.

Or

(b) State the need and importance of operator training.

15. (a) Explain the personal risk factors.

Or

(b) Shortly discuss about man-machine interface.

Part C (5 × 8 = 40)

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

16. (a) Identify the human factor's role in the work-study and explore the method study in detail.

Or

(b) Describe the PQS (Productivity, quality, and safety) in detail.

17. (a) Explain in detail about work platforms and their importance.

Or

(b) Explain the physiology of workers in detail and investigate the key variables that will impact their physiological costs.

18. (a) Explore the concepts of PPE and discuss its storage.

Or

(b) Define quality and standards and briefly discuss the procurement and testing of PPE.

19. (a) Briefly discuss the hierarchy of hazards and their prevention methods.

Or

(b) Explain – safety devices.

20. (a) Body size and posture in man machine system – discuss briefly.

Or

(b) Explore the strategies for enhanced performance.

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C–5134	Sub. Code
	30721

M.B.A. DEGREE EXAMINATION, APRIL 2025

Second Semester

Environment and Industrial Safety

EVOLUTION OF MODERN SAFETY CONCEPTS

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 1 = 10)$

Answer **all** questions.

1. Which technique involves a statistical approach to assessing safety performance by observing a sample of work activities?

   (a) Job Safety Analysis (JSA)

   (b) Safety Sampling

   (c) Incident Recall Technique (IRT)

   (d) Safety Inspection

2. In an organization's safety structure, who is typically responsible for the day-to-day implementation of safety procedures and practices?

   (a) Staff function

   (b) Line function

   (c) Safety committee

   (d) Top management

3. According to McGregor's Theory X and Theory Y, which theory assumes that employees are inherently motivated and seek responsibility?

(a) Theory X (b) Theory Y

(c) Theory Z (d) None of the above

4. Which management style is characterized by a high degree of control and decision-making by the leader, with little input from employees?

(a) Directive Democrat

(b) Permissive Autocrat

(c) Directive Autocrat

(d) Permissive Democrat

5. Which risk assessment tool is particularly useful for analyzing complex systems with multiple potential failure points?

(a) Fault Tree Analysis (FTA)

(b) Preliminary Hazard Analysis (PHA)

(c) Job Safety Analysis (JSA)

(d) Bowtie Analysis (BTA)

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

(a) Risk assessment

(b) Hazard identification

(c) Risk mitigation

(d) Risk monitoring

7. Which accident causation theory suggests that accidents are the result of a chain of events, each one triggering the next, like falling dominoes?

(a) Domino Theory

(b) Heinrich's Axioms

(c) Systems Theory

(d) Human Factors Theory

8. What is the primary purpose of an accident investigation?

(a) Assigning blame for the accident

(b) Preventing similar accidents in the future

(c) Documenting the financial impact of the accident

(d) Determining legal liability

9. Which type of redundancy involves having two or more identical components operating simultaneously, where the system can continue to function even if one component fails?

(a) Standby redundancy

(b) Unit redundancy

(c) Functional redundancy

(d) Cold redundancy

10. The Weibull model is primarily used for:

(a) Identifying hazards in a workplace

(b) Analyzing failure data and predicting product life

(c) Assessing the effectiveness of safety training

(d) Calculating the financial impact of accidents

Part B (5 × 5 = 25)

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

11. (a) Explain "safety sampling" and its application in assessing workplace safety. Compare its advantages and disadvantages to other methods.

Or

(b) Why is budgeting for safety important? What key elements should a safety budget include?

12. (a) How does Maslow's Hierarchy of Needs relate to motivating safe employee behavior?

Or

(b) Compare Theory X and Theory Y. How do these theories influence safety management?

13. (a) Define risk assessment and its role in risk management. Differentiate between qualitative and quantitative risk assessments.

Or

(b) What is reliability in safety-critical systems? How can it be enhanced?

14. (a) Explain the Domino Theory of accident causation and how it helps prevent accidents.

Or

(b) What is the purpose of an accident investigation? Describe its key steps and the importance of root cause analysis.

15. (a) Discuss redundancy in design and its role in improving system reliability. Differentiate between unit and standby redundancy.

Or

(b) What is the Weibull model? How is it used for reliability analysis and prediction of product life and failure rates?

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

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

16. (a) Critically analyze "line and staff functions" in safety management. How can they be balanced for a safe workplace? Discuss coordination challenges and solutions.

Or

(b) Why is evaluating supervisor safety performance important? What criteria and methods should be used? How do evaluations improve safety outcomes?

17. (a) Explain the Deming Cycle (PDCA) in safety management, with examples of each step's application in an industrial setting.

Or

(b) How do different management styles (directive, democratic, etc.) impact safety culture? Which style(s) are most effective for safety and why?

18. (a) Explain Failure Mode and Effects Analysis (FMEA) as a risk assessment tool, describing its steps and how it's used to identify and mitigate failures.

Or

(b) Discuss the role of critical system reliability in risk assessment. How can FTA and BTA be used to assess complex systems and vulnerabilities?

19. (a) Describe Heinrich's Axioms of Industrial Safety and explain their relevance to modern accident prevention in organizations.

Or

(b) Discuss the "modern causation model" and "Seven Avenues" approach in accident investigation. How do they help identify underlying accident causes?

20. (a) What is Pareto analysis and the 80/20 rule? Give examples of how it can be used to improve safety and reliability in industry.

Or

(b) Discuss the concept of maintainability and its relation to system reliability. What factors influence maintainability, and how can effective maintenance programs be designed?

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C–5135	Sub. Code 30722

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

Second Semester

Environment and Industrial Safety

EHS LEGISLATIONS

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Which of the following is the primary focus of the Factories Act 1948?

   (a) Environmental protection

   (b) Labor union regulations

   (c) Occupational health and safety of workers

   (d) Corporate governance

2. The Tamil Nadu Factories Rules 1950 are primarily concerned with:

   (a) Tax regulations for factories

   (b) International trade agreements

   (c) Implementation of the Factories Act 1948 in Tamil Nadu

   (d) Employee benefits and compensation

3. The Environment Act 1986 aims to:

(a) Promote economic development

(b) Protect and improve the environment

(c) Regulate international trade

(d) Control population growth

4. The Noise Pollution (Regulation and Control) Rules, 2000 primarily deal with:

(a) Water pollution control

(b) Air quality standards

(c) Noise level limits and restrictions

(d) Hazardous waste management

5. The main objective of the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 is to:

(a) Promote the use of hazardous chemicals in industries

(b) Ensure the safe handling, storage, and transport of hazardous chemicals

(c) Establish pricing guidelines for hazardous chemicals

(d) Control the export of hazardous chemicals

6. A Safety Data Sheet (SDS) for a hazardous chemical provides information about:

(a) The chemical's marketing potential

(b) The financial performance of the manufacturer

(c) The chemical's hazards, safe handling, and emergency procedures

(d) The chemical's production process

7. The Indian Boiler Act 1923 is primarily concerned with:
   (a) Environmental pollution control
   (b) Safety of boilers and pressure vessels
   (c) Regulation of electrical installations
   (d) Occupational health and safety in mines

8. The Building and Other Construction Workers Act 1996 aims to:
   (a) Regulate the construction industry
   (b) Protect the rights and welfare of construction workers
   (c) Promote sustainable building practices
   (d) Control the import of construction materials

9. OHSAS 18001 is an international standard for:
   (a) Environmental management systems
   (b) Quality management systems
   (c) Occupational health and safety management systems
   (d) Food safety management systems

10. The Occupational Safety and Health Act (OSHA) of the USA is a federal law that:
   (a) Regulates international trade agreements
   (b) Promotes environmental conservation
   (c) Sets standards for workplace safety and health
   (d) Controls the use of genetically modified organisms

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

Answer **all** the questions.

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

Or

(b) What are the special provisions related to hazardous processes under the Factories Act, 1948?

12. (a) Outline the Central Government's powers under the Environment Act, 1986 to control pollution.

Or

(b) Explain the concept of "No Objection Certificate" (NOC) from statutory authorities like the Pollution Control Board.

13. (a) Describe the occupier's responsibilities under the Hazardous Chemicals Rules, 1989.

Or

(b) Explain the process for obtaining a No Objection Certificate (NOC) for hazardous chemicals in India.

14. (a) Explain the importance of the Indian Boiler Act 1923 in ensuring boiler safety.

Or

(b) Summarize the key features of the Building and Other Construction Workers Act 1996.

15. (a) How does ISO 14000 contribute to environmental management systems, and what are its benefits for organizations?

Or

(b) Discuss the significance of the American National Standards Institute (ANSI) in developing safety standards and promoting workplace safety.

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

Answer **all** the questions.

16. (a) Evaluate the Factories Act 1948's effectiveness in ensuring worker safety, highlighting strengths, weaknesses, and areas for improvement.

Or

(b) Analyze the impact of the Tamil Nadu Factories Rules on working conditions, focusing on hours and young workers.

17. (a) Discuss the role of Pollution Control Boards in water pollution prevention, assessing effectiveness and suggesting improvements.

Or

(b) Critically analyze the implementation of Bio-Medical Waste and Noise Pollution Rules, identifying challenges and proposing solutions.

18. (a) Explain "major accidents" under the Hazardous Chemicals Rules, covering notification, information, and onsite/offsite plans.

Or

(b) Elaborate on the importance of Safety Reports and Data Sheets in ensuring safe chemical handling under the Hazardous Chemicals Rules.

19. (a) Discuss the Mines Act 1952's provisions on worker safety, health, and welfare assessing, its effectiveness in accident prevention.

Or

(b) Critically evaluate the Hazardous Wastes Rules, highlighting challenges and suggesting solutions for better enforcement.

20. (a) Compare and contrast OSHA (USA) and HASAW (UK) in promoting workplace safety.

Or

(b) Analyze the significance of OHSAS 18001 and ISO 14001 in promoting workplace safety and environmental management, noting challenges in developing countries.

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C–5136	Sub. Code
	30723

M.B.A. DEGREE EXAMINATION, APRIL 2025

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 diagram provides a visual overview of the major equipment and material flows in a process?

   (a) Piping and Instrumentation Diagram (P and ID)

   (b) Block Flow Diagram (BFD)

   (c) Electrical Classification Diagram

   (d) Process Flow Diagram (PFD)

2. What is the purpose of a relief system design in a process?

   (a) To control the temperature of the process

   (b) To prevent overpressure conditions and protect equipment

   (c) To regulate the flow rate of materials

   (d) To improve energy efficiency

3. Which Process hazard Analysis (PHA) method involves systematically questioning every part of a process using guide words like "No/Not," "More, Less" etc.?

(a) What-If Analysis (b) Checklist Analysis

(c) HAZOP (d) FMEA

4. What type of training is conducted periodically to reinforce safety procedures and knowledge?

(a) Initial Training

(b) On-the-Job Training

(c) Refresher Training

(d) Intermittent Training

5. Which aspect of mechanical integrity involves ensuring that equipment is properly designed, installed, and maintained?

(a) Training (b) Equipment Deficiencies

(c) Quality Assurance (d) Management of Change

6. What is the purpose of a Pre-Startup Safety Review (PSSR)?

(a) To identify and address potential hazards before starting a new process

(b) To review employee training records

(c) To assess the financial viability of a project

(d) To evaluate the environmental impact of a process

7. What is the primary goal of incident investigation?

(a) To determine who is at fault

(b) To document the financial losses

(c) To prevent future similar incidents

(d) To satisfy regulatory requirements

8. Why is employee participation important in safety management?

(a) It improves morale and productivity

(b) It reduces the workload on safety professionals

(c) Employees have valuable insights into hazards and risks

(d) It is a legal requirement

9. What is the purpose of a Hot Work Permit?

(a) To authorize work in extreme weather conditions

(b) To control work involving potential ignition sources

(c) To manage high-temperature processes

(d) To allow work during non-standard hours

10. Who is responsible for ensuring that contractors working on a site are aware of and comply with safety procedures?

(a) The contractor's employers

(b) The principle employer

(c) Both the contractor's and principle employer

(d) The regulatory authorities

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

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

11. (a) Explain "maximum intended inventory" in process safety and its relation to operating limits.

Or

(b) What are piping and instrumentation diagrams (P&IDs) and how are they used in process safety?

12. (a) Briefly describe the different methods for conducting a Process Hazard Analysis (PHA), noting their advantages and limitations.

Or

(b) Why are operating procedures important in process safety? What should be included in a comprehensive operating procedure?

13. (a) Define "mechanical integrity" and explain its importance in process safety. What are the key elements of an effective program?

Or

(b) Explain "management of change" (MOC) in process safety and describe its steps. How does MOC help control hazards?

14. (a) Discuss the importance of employee participation in process safety. How can employees be involved, and what benefits does their participation bring?

Or

(b) Explain "trade secrets" in process safety. What information might be considered a trade secret, and how can confidentiality be balanced with safety?

15. (a) Discuss the key elements of a Hot Work Permit system and how it controls hazards associated with hot work activities.

Or

(b) Describe the roles of principle and contractor employers in ensuring safety during contracted work. What challenges exist, and how can they be addressed?

Part C

$(5 \times 8 = 40)$

Answer **all** the questions.

16. (a) Critically analyze the concept of "Process Safety Management" (PSM). What are the key elements, and how does it prevent major accidents?

Or

(b) Describe different safety systems in process industries (e.g., interlocks, alarms, emergency shutdowns). How do they function, what are their limitations, and how do they contribute to process safety?

17. (a) Discuss the role of training in Process Hazard Analysis (PHA). How do different types of training contribute to PHA effectiveness and overall process safety?

Or

(b) What are key considerations for selecting materials of construction for piping and equipment in a process plant? Discuss their impact on safety, including corrosion, temperature limits, and chemical compatibility.

18. (a) Explain "Quality Assurance" in mechanical integrity. What activities ensure equipment reliability and safety throughout its lifecycle?

Or

(b) Describe a compliance audit in a process facility. What are its key elements, and how can audit findings improve safety performance and regulatory compliance?

19. (a) Discuss different incident investigation methodologies in process industries. Explain their steps, strengths, weaknesses, and how they identity root causes.

Or

(b) Explain employee participation in process safety. How can employees be involved, and what are the benefits of their participation in safety decision-making?

20. (a) Describe the key components of an emergency response plan for a process facility. How should it be developed, implemented, and maintained?

Or

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

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C–5137	Sub. Code
	30724

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

Second Semester

Environment and Industrial Safety

OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the questions.

1. Which of the following is NOT a type of pneumoconiosis?
   (a) Silicosis (b) Asbestosis
   (c) Anthracosis (d) Siderosis

2. Manganese toxicity primarily affects which organ system?
   (a) Nervous system
   (b) Respiratory system
   (c) Cardiovascular system
   (d) Digestive system

3. Which type of ventilation is most effective for controlling localized hazardous emissions?
   (a) Dilution ventilation
   (b) Local exhaust ventilation
   (c) Natural ventilation
   (d) Mechanical ventilation

4. The lux (lx) is a unit of measurement for :

(a) Sound intensity

(b) Illuminance

(c) Temperature

(d) Air velocity

5. Which of the following is a sign of a fractured skull?

(a) Severe headache

(b) Clear fluid leaking from the ears or nose

(c) Nausea and vomiting

(d) All of the above

6. In CPR, the ratio of chest compressions to rescue breaths for an adult is :

(a) 15 : 2 (b) 30 : 2

(c) 5 : 1 (d) 100 : 2

7. What is the first step in treating a chemical burn?

(a) Apply a bandage

(b) Apply ice

(c) Neutralize the chemical with another substance

(d) Flush the area with water

8. A sprain is an injury to :

(a) A bone (b) A ligament

(c) A muscle (d) A tendon

9. Job satisfaction is primarily influenced by :

(a) Salary

(b) Company size

(c) Industry type

(d) A combination of personal and organizational factors

10. The General Adaptation Syndrome (GAS) describes

(a) The body's response to stress

(b) The stages of career development

(c) The process of learning new skills

(d) The development of mental illness

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

Answer **all** the questions.

11. (a) Define occupational and work-related diseases. What are notifiable occupational diseases and why are they important?

Or

(b) Explain industrial toxicology and the various types of toxic effects (local, systemic, acute, chronic, temporary, and cumulative) on workers.

12. (a) What is noise? How is it measured and controlled in the workplace? Discuss the effects of noise exposure.

Or

(b) Explain thermal stress, heat disorders, and the WBGT index. How can acclimatization and ventilation prevent heat-related illnesses?

13. (a) What are the signs and symptoms of a stroke, and how should a first aider respond?

Or

(b) Describe the structure and function of the musculoskeletal system. Explain how this knowledge aids in providing first aid for related injuries.

14. (a) What is shock? Describe its types, signs, symptoms, and first aid management.

Or

(b) Discuss the different types of burns and their characteristics. Explain the 'rule of nines' and its use in assessing bum severity.

15. (a) Explain industrial psychology's relevance to mental health in industries. Discuss factors like organizational behavior, motivation, and communication affecting employee well-being.

Or

(b) Define workplace stress and discuss its causes and effects. Explain eustress, distress, and the General Adaptation Syndrome.

Part C

$(5 \times 8 = 40)$

Answer **all** the questions.

16. (a) What is the hierarchy of controls? Describe each level with examples and explain how they combine to protect workers.

Or

(b) Explain the principles and components of industrial hygiene. How is it applied in practice to recent occupational diseases?

17. (a) Define ergonomics and its role in the workplace. Discuss ergonomic hazards, risk assessment, and interventions to improve workplace design and processes.

Or

(b) What is illumination? Explain factors affecting lighting quality and how lighting can be optimized for comfort performance, and safety in various work environments.

18. (a) Describe the circulatory system and its role in maintaining vital functions. How is it affected by injuries or medical conditions? Discuss first aid for circulatory emergencies.

Or

(b) Explain vital signs in first aid. Describe the four primary vital signs, their normal ranges, measurement methods, and how changes indicate health conditions.

19. (a) Discuss different types of eye injuries in the workplace and their first aid management. Emphasize immediate actions and when to seek medical attention.

Or

(b) Explain the principles of bandaging. Describe different types of bandages and their uses, and discuss proper techniques for applying them to various body parts.

20. (a) Explain the role of psychological counseling in addressing mental health issues in the workplace.

Or

(b) Discuss the concept of 'behavior-based safety' and its application in promoting a safe work environment.

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C–5138	Sub. Code
	30725

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

Second Semester

Environment and Industrial Safety

HAZARD IDENTIFICATION, RISK ASSESSMENT AND RISK CONTROL

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 1 = 10)$

Answer **all** questions.

1. Which of the following is NOT typically included in a risk register?

   (a) Severity of the hazard

   (b) Likelihood of the hazard occurring

   (c) Employee performance reviews

   (d) Risk mitigation measures

2. What does ALARP stand for in risk assessment?

   (a) As Low As Reasonably Practical

   (b) Always Lower All Risks Possible

   (c) As Little As Realistically Possible

   (d) All Losses Are Reported Promptly

3. Which risk analysis method focuses on identifying potential failures and their effects on a system?

(a) Job Safety Analysis (JSA)

(b) Root Cause Analysis (RCA)

(c) Failure Mode and Effects Analysis (FMEA)

(d) Hazard and Operability Study (HAZOP)

4. In risk analysis, what does the term 'risk appetite' refer to?

(a) The amount of risk a company is willing to accept

(b) The likelihood of a hazard occurring

(c) The severity of potential consequences

(d) The cost of implementing risk mitigation measures

5. Which safety management tool uses a structured brainstorming approach to identify potential hazards in a process?

(a) Fault Tree Analysis (FTA)

(b) Event Tree Analysis (ETA)

(c) Hazard and Operability Study (HAZOP)

(d) Failure Mode and Effects Analysis (FMEA)

6. Which of the following is a quantitative risk assessment technique?

(a) Fault Tree Analysis (FTA)

(b) Hazard and Operability Study (HAZOP)

(c) Job Safety Analysis (JSA)

(d) Preliminary Hazard Analysis (PHA)

7. What is the primary objective of a Hazard Identification and Risk Assessment (HIRA) study?

(a) To eliminate all hazards in a workplace

(b) To identify, assess and control risks

(c) To determine the financial cost of accidents

(d) To create a comprehensive safety manual

8. In a risk matrix, which combination typically represents the highest risk priority?

(a) Low likelihood, high severity

(b) High likelihood, low severity

(c) High likelihood, high severity

(d) Low likelihood, low severity

9. Which chemical accident is known for its release of methyl isocyanate, resulting in a major industrial disaster?

(a) Bhopal disaster

(b) Seveso disaster

(c) Flixborough disaster

(d) Pasadena disaster

10. What was a major contributing factor to the piper alpha disaster?

(a) Earthquake

(b) Terrorist attack

(c) Gas leak and explosion

(d) Chemical spill

Part B (5 × 5 = 25)

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

11. (a) Explain the concept of "risk' and differentiate between "hazard" and "risk." Provide an example to illustrate the difference.

Or

(b) What are the key components of a Risk Register, and why is it an essential tool in risk management?

12. (a) Describe the process of Job Safety Analysis (JSA). How does JSA contribute to risk reduction in a workplace?

Or

(b) Explain the concept of "cost-benefit analysis" in the context of risk management. Provide an example of how it can be applied.

13. (a) Outline the steps involved in conducting a Hazard and Operability Study (HAZOP). What are the key benefits of using HAZOP?

Or

(b) Describe the Hazard and Operability Study (HAZOP) methodology. What are its key objectives, and how is it conducted?

14. (a) What are the key steps involved in a Hazard Identification and Risk Assessment (HIRA) study? Explain the purpose of a risk matrix in this process.

Or

(b) Differentiate between qualitative and quantitative risk assessment methods. Provide examples of each.

15. (a) Discuss the Bhopal disaster. What were the main causes and consequences of this accident? What lessons can be learned to prevent similar incidents?

Or

(b) Analyze the Piper Alpha disaster. How did the accident unfold, and what were the key factors that contributed to its severity?

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

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

16. (a) Discuss the importance and types of safety warning systems in preventing accidents.

Or

(b) Explain human error analysis in risk assessment and methods used to analyze human errors.

17. (a) Explain risk-benefit and cost-benefit analysis in detail and how they aid risk mitigation decisions.

Or

(b) What is Root Cause Analysis (RCA)? Describe its process and significance in preventing accident recurrence.

18. (a) Discuss the "risk priority number (RPN)" concept in FMEA. How is it calculated and used to prioritize risk control measures?

Or

(b) Compare and contrast Event Tree Analysis (ETA) and Fault Tree Analysis (FTA) in assessing event probabilities and consequences.

19. (a) Explain "specific site assessment" in hazard identification and risk assessment. How does it differ from a general risk assessment?

Or

(b) Discuss different risk control methods (elimination, substitution, engineering controls, etc.) with examples of workplace implementation.

20. (a) Analyze the Flix borough disaster, its root causes, and its impact on chemical industry safety practices.

Or

(b) Discuss the Port Hudson disaster of 1966 and lessons learned regarding hazard identification, risk assessment, and emergency response.

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C–5139	Sub. Code
	30726A

M.B.A DEGREE EXAMINATION, APRIL 2025

Second Semester

Environment and Industrial Safety

TEXTILE SAFETY

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Section A (10 × 1 = 10)

Answer **all** questions.

1. Which of the following is NOT a common stage in the short staple spinning process?

   (a) Opening and cleaning

   (b) Carding

   (c) Combing

   (d) Singeing

2. In a ring spinning frame, which component twists the fibers into yarn?

   (a) Flyer (b) Bobbin

   (c) Traveler (d) Ring

3. Which of the following is a major hazard associated with size cooking vessels?

   (a) Entanglement in moving parts

   (b) Burns from hot size solution

   (c) Exposure to toxic chemicals

   (d) All of the above

4. Shuttleless looms have reduced the risk of which of the following hazards compared to shuttle looms?

(a) Noise exposure

(b) Flying shuttle injuries

(c) Repetitive strain injuries

(d) Chemical exposure

5. Which textile process involves removing natural impurities and waxes from fibers?

(a) Scouring (b) Bleaching

(c) Dyeing (d) Printing

6. Which type of finishing operation involves applying pressure and heat to fabrics?

(a) Calendering (b) Sanforizing

(c) Napping (d) Shearing

7. Byssinosis is an occupational lung disease most commonly associated with exposure to:

(a) Cotton dust (b) Wool dust

(c) Flax dust (d) Synthetic fibers

8. Which type of personal protective equipment (PPE) is essential for workers exposed to high noise levels?

(a) Respirators

(b) Safety goggles

(c) Gloves

(d) Earplugs or earmuffs

9. The Factories Act and Rules primarily focus on:

(a) Environmental protection

(b) Worker health and safety

(c) Product quality control

(d) International trade regulations

10. Which of the following is a common method for treating textile effluents?

(a) Biological treatment

(b) Chemical treatment

(c) Physical treatment

(d) All of the above

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

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

11. (a) Explain the key differences between spun and filament yarns, their advantages, disadvantages, and typical applications.

Or

(b) Define "hazard" and "risk" in the textile industry, providing examples of each specific to textile manufacturing.

12. (a) What are the hazards associated with steam usage in textile sizing? How can accidents and injuries related to steam be prevented?

Or

(b) Describe the safety precautions necessary when working with shuttle looms, emphasizing worker training for safe operation.

13. (a) Define "effluents" in textile processing and describe the different types generated. What are their potential impacts on water quality and the environment?

Or

(b) Discuss the various types of dyes used in textile dyeing, highlighting environmental and health concerns and suggesting safer alternatives.

14. (a) Define "fly" in the textile industry. How is it generated, what are the associated health risks, and how can it be controlled?

Or

(b) Explain ergonomic hazards in the textile industry. Identify common risk factors for workers and suggest workplace design improvements to reduce these risks.

15. (a) Discuss the role of the Indian government in ensuring safety in the textile industry, mentioning key regulatory bodies and legislation.

Or

(b) Explain the importance of waste disposal in the textile industry. What waste types are generated, and how can they be managed responsibly?

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

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

16. (a) Outline the process flow chart for manufacturing fabric from filament yarn, detailing each stage and associated safety considerations.

Or

(b) Explain accident hazards and safety precautions specific to flyer frames and ring frames, emphasizing worker safety during operation and maintenance.

17. (a) Compare and contrast shuttle looms and shuttleless looms, highlighting their features, advantages, disadvantages, and safety considerations.

Or

(b) Discuss the health hazards associated with scouring, bleaching, dyeing, and printing processes, including specific chemicals, their effects, and control measures.

18. (a) Explain "textile-related occupational diseases," discussing common respiratory, skin, and musculoskeletal disorders, their causes, symptoms, and preventive measures.

Or

(b) Discuss health and welfare measures specific to the textile industry. What steps can employers take to improve working conditions, promote worker health, and ensure regulatory compliance?

19. (a) Provide an overview of effluent treatment and waste disposal in the textile industry, explaining different technologies and emphasizing sustainable practices.

Or

(b) Discuss the Factories Act and other statutes applicable to the textile industry. How do these regulations impact workplace safety, health, and environmental protection?

20. (a) Analyze the Mexico City disaster (1984) in the context of chemical accidents in textiles. Discuss causes, consequences, and lessons learned to prevent similar incidents.

Or

(b) Provide a detailed report on the Port Hudson disaster, including causes, consequences, and lessons learned regarding flammable material storage and handling in the textile industry.

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C–5140	Sub. Code
	30726B

M.B.A. DEGREE EXAMINATION, APRIL 2025

Second Semester

Environment and Industrial Safety

SAFETY IN MINES

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

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

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

3. What is the purpose of a "pilot tunnel" in tunneling projects?
   (a) To test the ground conditions
   (b) To provide initial ventilation
   (c) To explore for valuable minerals
   (d) To create an escape route

4. Which of the following is a quantitative method for risk assessment?

(a) Fault tree analysis

(b) Failure mode and effects analysis

(c) Hazard and operability study

(d) Cost-benefit analysis

5. What is the main objective of accident analysis in mining?

(a) To determine who is at fault

(b) To identify the root causes of accidents

(c) To calculate the financial cost of accidents

(d) To punish those responsible

6. In opencast mines, which of the following poses the greatest risk of fire?

(a) Water pumps

(b) Electrical systems

(c) Hand tools

(d) Belt conveyors

7. What is the primary hazard associated with water in underground mines?

(a) Flooding

(b) Dust suppression

(c) Erosion

(d) Firefighting

8. Which type of tunnel lining is best suited for soft ground conditions?

(a) Concrete lining

(b) Steel ribs

(c) Precast concrete segments

(d) Shotcrete

9. Which risk assessment technique focuses on identifying potential failure modes and their effects?

(a) Fault tree analysis

(b) Failure mode and effects analysis

(c) Hazard and operability study

(d) Risk matrix

10. What is the first step in disaster management for mines?

(a) Evacuation

(b) Search and rescue

(c) Damage assessment

(d) Emergency preparedness planning

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

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

11. (a) What are the main causes of accidents involving heavy machinery in opencast mines, and how can they be prevented?

Or

(b) Describe the accident reporting system in opencast mines. Why is accurate reporting important?

12. (a) Explain the roles of warning sensors and gas detectors in underground mine safety.

Or

(b) What are the common occupational hazards in underground mines, and how can they be addressed?

13. (a) Describe hazards associated with ground collapse and inundation in tunneling, and measures to prevent them.

Or

(b) Discuss the sources of noise and vibration in tunneling, and their control for worker protection.

14. (a) Define "risk," "reliability," and "hazard potential" in risk assessment. Explain their interrelationship and importance in safety management.

Or

(b) What are control charts, and how are they used in risk assessment for trend analysis and anomaly detection?

15. (a) Discuss the different classifications of accidents in mine safety (fatal, serious, minor, reportable) and their importance in analysis.

Or

(b) What is a safety audit? Explain its steps and how it contributes to improving safety performance in mines.

Part C (5 × 8 = 40)

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

16. (a) Provide a comprehensive overview of safety measures for belt and bucket conveyors in opencast mines.

Or

(b) Explain the concept of "garage safety" in opencast mines, discussing essential safety practices for vehicle maintenance and storage.

17. (a) Discuss the effects of various gases in underground mines and how their presence can be detected and controlled.

Or

(b) Explain fire and explosion hazards in underground mines, detailing prevention strategies, detection systems and emergency procedures.

18. (a) Describe different ventilation systems used in tunnels and their role in ensuring adequate airflow and removing contaminants.

Or

(b) Discuss the importance of personal protective equipment (PPE) in tunneling, listing various types used and their protective functions.

19. (a) Explain Fault Tree Analysis (FTA) and illustrate its application in risk assessment with an example related to mining or tunneling.

Or

(b) Discuss the Failure Mode and Effect Analysis (FMEA) methodology. How does FMEA help identify failure modes, evaluate consequences, and prioritize corrective actions?

20. (a) Analyze a recent major mining accident, discussing contributing factors and lessons learned for prevention.

Or

(b) Explain emergency preparedness and disaster management in mining and tunneling, outlining an effective emergency response plan and the role of training and drills.

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C–5141	Sub. Code
	30726C

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

Second Semester

Environment and Industrial Safety

TRANSPORT SAFETY

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the questions.

1. What is the purpose of a TREM card in the transportation of hazardous goods?
   (a) To provide information about the driver's qualifications
   (b) To list emergency contact numbers for the transportation company
   (c) To detail the properties and hazards of the transported goods
   (d) To provide instructions for securing the load

2. What is the main purpose of a tachograph in driver safety?
   (a) To track the vehicle's location in real-time
   (b) To monitor driver behavior and fatigue levels
   (c) To record the vehicle's speed and distance traveled.
   (d) To provide entertainment for the driver during long journeys

3. Which of the following factors can significantly affect road alignment and gradient?

(a) Terrain

(b) Traffic volume

(c) Environmental concerns

(d) All of the above

4. What is the purpose of guardrails and barriers on roads?

(a) To prevent vehicles from leaving the road

(b) To reduce the severity of crashes

(c) To protect pedestrians and cyclists

(d) All of the above

5. Which of the following is a common cause of accidents involving cranes in shop floors?

(a) Overloading

(b) Improper rigging

(c) Operator error

(d) All of the above

6. What is the most important safety precaution when handling gasoline in a repair shop?

(a) Wearing gloves

(b) Using a funnel

(c) Ensuring proper ventilation

(d) Storing gasoline in a clearly labeled container

7. What is the main purpose of the Motor Vehicles Act?

(a) To regulate the design and manufacture of vehicles

(b) To establish speed limits on different roads

(c) To promote road safety and regulate traffic

(d) To provide financial compensation to accident victims

8. What is the significance of "fleet accident frequency" in the transportation industry?

(a) It measures the average speed of vehicles in a fleet

(b) It indicates the rate at which accidents occur within a fleet

(c) It determines the insurance premiums for a fleet of vehicles

(d) It assesses the fuel efficiency of vehicles in a fleet

9. Which of the following is a common cause of skidding in vehicles?

(a) Over-inflated tires

(b) Sudden braking

(c) Wet road conditions

(d) All of the above

10. What type of safety equipment is essential when working with batteries in a repair shop?

(a) Earplugs

(b) Safety goggles

(c) Respirator

(d) Insulated gloves and tools

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Explain the significance of Transport Emergency Cards (TREM) in hazardous goods transport.

Or

(b) Discuss the importance of driver training for safe hazardous goods transportation.

12. (a) Analyze factors contributing to road accidents involving drivers and pedestrians.

Or

(b) Describe the Motor Vehicles Act's role in promoting road safety.

13. (a) Explain the concept of a tachograph and its role in driver safety.

Or

(b) Discuss driver responsibilities in reporting and investigating accidents.

14. (a) Explain the concept of sight distance and its influence on road design.

Or

(b) Discuss the role of traffic control lines, guideposts, guardrails, and barriers in road safety.

15. (a) Describe safety precautions for transporting materials on shop floors.

Or

(b) Explain safety procedures for battery charging and gasoline handling in repair shops.

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

Answer **all** the questions.

16. (a) Describe design considerations for tanker lorries carrying hazardous goods.

Or

(b) Explain the importance of static electricity prevention in hazardous goods transport.

17. (a) Discuss preventive maintenance and checklists for safe motor truck operation.

Or

(b) Explain motor vehicle insurance and its importance in road safety.

18. (a) Discuss the components of a comprehensive driver safety program.

Or

(b) Explain the significance of speed and fuel conservation in road safety.

19. (a) Discuss factors influencing road alignment and gradient, impacting safety and efficiency.

Or

(b) Explain the significance of adequate street lighting and illumination for road safety.

20. (a) Describe safety practices for operating and maintaining cranes and conveyors on shop floors.

Or

(b) Discuss safety precautions for working with grease racks and wash racks in repair shops.

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C–5142	Sub. Code
	30727

M.B.A. DEGREE EXAMINATION, APRIL 2025

Second Semester

Environment and Industrial Safety

PERSONALITY DEVELOPMENT

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Which of the following best describes "empathy"?
   (a) Feeling sorry for someone
   (b) Understanding and sharing the feelings of another
   (c) Ignoring the emotions of others
   (d) Being highly critical of others' weaknesses

2. A "time waster" in the context of time management could be
   (a) Planning your day
   (b) Attending necessary meetings
   (c) Excessive social media use
   (d) Prioritizing tasks

3. Which of these is NOT typically considered a "soft skill"?
   (a) Coding in Python (b) Communication
   (c) Teamwork (d) Problem-solving

4. Which interview question is generally considered inappropriate or "illegal"?

(a) "What are your strengths?"

(b) "What is your religious affiliation?"

(c) "What are your salary expectations?"

(d) "Tell me about your experience."

5. Which of the following is a characteristic of a "laissez-faire" leadership style?

(a) Close supervision of team members

(b) Providing minimal guidance and allowing autonomy

(c) Making all decisions independently

(d) Focusing on strict adherence to rules

6. Which of the following is a benefit of effective listening?

(a) Misunderstandings are more likely

(b) Improved communication and relationships

(c) Increased conflict

(d) Less information is retained

7. "Goal orientation" refers to

(a) Lacking direction in one's career

(b) Focusing efforts on achieving specific objectives

(c) Avoiding challenges and difficult tasks

(d) Being easily distracted from important activities

8. Which of the following is a good practice when giving a presentation?

(a) Reading directly from your notes

(b) Maintaining eye contact with the audience

(c) Speaking in a monotone voice

(d) Using complex jargon without explanation

9. Which of the following is NOT usually included in a resume?

(a) Personal hobbies unrelated to the job

(b) Work experience

(c) Education

(d) Skills

10. What is the primary purpose of a "mock interview"?

(a) To guarantee a job offer

(b) To practice and prepare for real interviews

(c) To criticize the candidate's appearance

(d) To assess personality rather than skills

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

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

11. (a) What are the key communication skills necessary for professional success?

Or

(b) Explain the role of observation in effective communication.

12. (a) Define creativity and discuss basic methods to improve creativity.

Or

(b) What are the factors that influence emotional intelligence?

13. (a) Explain the importance of motivation in leadership.

Or

(b) Discuss the different types of leadership styles with their advantages and disadvantages.

14. (a) Describe the steps to preparing an effective resume.

Or

(b) What are the common mistakes candidates make in job interviews?

15. (a) Explain the significance of grooming and professional attire in job interviews.

Or

(b) Discuss the importance of soft skills in personal and professional development.

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

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

16. (a) Explain the stages of the listening process and their significance in communication.

Or

(b) Discuss the various barriers to communication and strategies to overcome them.

17. (a) Describe the process of personal goal setting and its impact on career growth.

Or

(b) Explain the 10 blocks that hinder creativity and suggest ways to overcome them.

18. (a) What are the seven rules of motivation? Explain their relevance in professional success.

Or

(b) Discuss the top 10 leadership qualities with real-world examples.

19. (a) Explain the role of effective follow-up after a job interview and how it can improve hiring chances.

Or

(b) What are illegal interview questions? Why should interviewers avoid them?

20. (a) Discuss the importance of group discussions in job selection and how candidates can perform well in them.

Or

(b) Explain the significance of training and certification in career development.

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	30731

M.B.A. DEGREE EXAMINATION, APRIL 2025

Third Semester

Environment and Industrial Safety

SAFETY INSPECTION AND AUDIT

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the questions.

1. Which of the following is NOT a typical safety feature on a tanker lorry designed for hazardous goods transport?

   (a) Pressure relief valves

   (b) Rollover protection

   (c) Flame arrestors

   (d) Automatic transmission

2. Which of the following is a crucial aspect of communication during the transportation of hazardous goods?

   (a) Clear labeling of the vehicle

   (b) Maintaining contact with dispatchers

   (c) Reporting any incidents or delays

   (d) All of the above

3. Which of the following factors can contribute to accidents caused by pedestrians?

(a) Jaywalking

(b) Distracted walking

(c) Poor visibility

(d) All of the above

4. What is the purpose of preventive maintenance for motor trucks?

(a) To reduce fuel consumption

(b) To increase the resale value of the truck

(c) To identify and fix potential problems before they cause breakdowns

(d) To improve the truck's aesthetics

5. What is the purpose of a driver's cabin slogan?

(a) To advertise the transportation company

(b) To entertain the driver during long journeys

(c) To remind the driver of safe driving practices

(d) To provide information about the destination

6. Which of the following is NOT a factor influencing driver relaxation and rest pauses?

(a) Hours of service regulations

(b) Road conditions

(c) Driver fatigue

(d) Vehicle speed

7. Which of the following is a factor affecting the selection of road alignment?

(a) Cost of construction

(b) Environmental impact

(c) Traffic volume

(d) All of the above

8. What is the purpose of street lighting in road safety?

(a) To enhance visibility

(b) To reduce accidents at night

(c) To improve driver comfort

(d) All of the above

9. What is the main hazard associated with moving cranes on the shop floor?

(a) Collision with workers or objects

(b) Tipping over

(c) Dropping the load

(d) All of the above

10. What are the potential hazards associated with servicing and maintaining equipment in a repair shop?

(a) Exposure to hazardous chemicals

(b) Electrical shock

(c) Moving parts

(d) All of the above

Part B (5 × 5 = 25)

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

11. (a) Explain the significance of workplace inspections for workplace safety.

Or

(b) What information should be included in a workplace inspection report?

12. (a) Compare and contrast a safety audit and a safety inspection in terms of their objectives and scope.

Or

(b) Describe how audit evidence is collected and evaluated during a safety audit.

13. (a) Define the term "OH&S policy" and describe the key components of an effective policy.

Or

(b) Explain why worker consultation and participation is essential for a successful OHSMS.

14. (a) What are the objectives and specifications of the ISO 14001 standard for Environmental Management Systems?

Or

(b) Briefly describe the key stages of Life Cycle Assessment (LCA) according to ISO 14040.

15. (a) What are the principles and rules for eco-labeling that companies should consider before seeking certification?

Or

(b) Explain the role of Environmental Impact Assessment (EIA) in an Environmental Management System (EMS).

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

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

16. (a) Explain in detail the process of conducting follow-up actions and monitoring after a workplace inspection, ensuring effective implementation of corrective measures.

Or

(b) Discuss the various methods used to gather audit evidence during a safety audit, including interviews, observations, and document reviews.

17. (a) Describe how leadership commitment can be demonstrated in establishing and maintaining an effective OHSMS. What impact does this commitment have on the organization's safety culture?

Or

(b) Explain the mechanisms that can be used to ensure effective worker consultation and participation in decision-making processes related to occupational health and safety.

18. (a) Provide a comprehensive explanation of clauses 4.1 to 4.5 of the ISO 14001 standard, focusing on the requirements for understanding the organization, stakeholders, and the scope of the EMS.

Or

(b) Discuss eco-labeling according to ISO 14021 and 14024, differentiating between Type I and Type II labels. What are the benefits of ecolabeling for consumers and the environment?

19. (a) Compare and contrast different types of Environmental Impact Assessments (EIA), such as project-level, strategic, and regional EIA, highlighting their applications and differences.

Or

(b) Describe the steps involved in conducting an EIA, from the initial screening and scoping phase to impact prediction, mitigation and monitoring.

20. (a) Analyze the factors that contribute to the successful implementation of an OHSMS within an organization, focusing on leadership, communication, resources and continuous improvement.

Or

(b) Discuss the challenges and limitations of EIA as an environmental management tool, addressing issues such as biases, uncertainties, and the effectiveness of mitigation measures

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C–5146	Sub. Code
	30732

M.B.A. DEGREE EXAMINATION, APRIL 2025

Third Semester

Environment and Industrial Safety

INDUSTRIAL HYGIENE AND TOXICOLOGY

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. Which of the following is NOT a function of the skeletal system?

   (a) Support (b) Protection

   (c) Movement (d) Digestion

2. Which type of radiation has enough energy to remove electrons from atoms, creating ions?

   (a) Non-ionizing radiation

   (b) Infrared radiation

   (c) Ionizing radiation

   (d) Microwave radiation

3. Which of the following is an example of an irritant toxic material in the air?

   (a) Carbon monoxide (b) Hydrogen cyanide

   (c) Ammonia (d) Benzene

4. What does MSD stand for in the context of ergonomics?

(a) Manual System Disorder

(b) Musculoskeletal Disorder

(c) Multiple Stress Disorder

(d) Motor Skill Dysfunction

5. Which type of lung function test measures the amount of air that can be forcefully exhaled in one second?

(a) Lung volume

(b) Forced expiratory volume (FEV1)

(c) Airways resistance

(d) Peak flow

6. What is the term for the study of how the human body interacts with tools, machines, and the work environment?

(a) Industrial hygiene

(b) Toxicology

(c) Ergonomics

(d) Occupational health

7. Which of the following is a bloodborne disease?

(a) Anthrax (b) Legionnaires disease

(c) Hepatitis B (d) Salmonellosis

8. What is the HAZCHEM code used for?

(a) Identifying hazardous materials

(b) Providing emergency response information

(c) Classifying toxic materials

(d) Determining exposure limits

9. Which ergonomic condition is characterized by pain and numbness in the fingers, especially at night?

(a) Trigger finger

(b) Tennis elbow

(c) Carpal tunnel syndrome

(d) Tendinitis

10. What is the purpose of indoor air quality (IAQ) monitoring?

(a) To assess worker exposure to specific chemicals

(b) To evaluate the overall health of employees

(c) To ensure compliance with occupational exposure limits

(d) To assess the quality of air within buildings and its impact on occupant health

Part B (5 × 5 = 25)

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

11. (a) Describe the skeletal system's structure and function. How does it relate to industrial diseases?

Or

(b) Explain industrial hygiene's importance for worker safety. What's the role of industrial hygienists?

12. (a) Explain noise and vibration workplace hazards, their health effects, and control measures..

Or

(b) Describe types of ionizing/non-ionizing radiation, their health effects, and safety measures for industrial use.

13. (a) Explain the dose-response relationship in toxicology. Why are threshold and lethal doses important?

Or

(b) Describe different toxin entry routes into the body. How does the route influence toxic effects?

14. (a) Explain workplace risk assessment in ergonomics, including steps and how findings guide interventions.

Or

(b) Describe ergonomic principles for designing workstations/tasks to minimize MSD risk.

15. (a) Explain air sampling's purpose and principles in industrial hygiene. Discuss different methods and their uses.

Or

(b) Describe biological monitoring for assessing worker exposure. Explain sample types and biomarkers.

Part C

$(5 \times 8 = 40)$

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

16. (a) Detail the respiratory system's function and how workspace hazards can affect its. Give example of related diseases and prevention.

Or

(b) Discuss musculoskeletal industrial diseaes (e.g., carpal tunnel syndrome).Explain contributing factors and ergonomic preventing measures.

17. (a) Detail engineering controls (ventilation, isolation, substitution) for workplace hazards, with examples from different industries.

Or

(b) Explain the hierarchy of hazard controls, prioritizing higher-level options. Discuss limitations of relying on PPE alone.

18. (a) Discuss factors affecting substance toxicity (properties, dose, duration, susceptibility). How are these considered in evaluations and risk assessment?

Or

(b) Describe toxin metabolism and excretion. Explain how biotransformation affects toxicity and the role of liver and kidneys in elimination.

19. (a) Detail ergonomic hazards of manual material handling (lifting, etc.) Explain biomechanics and interventions to reduce injury risk.

Or

(b) Discuss ergonomic consideration for computer workstation, including posture, adjustments, and input devices.

20. (a) Discuss analytical methods used in air sampling to identify / quantify contaminants. Explain principles, advantages, and limitations.

Or

(b) Describe a comprehensive, occupational health surveillance program's components (exams, assessments, monitoring). Explain each component's importance for worker health.

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	30733

M.B.A. DEGREE EXAMINATION, APRIL 2025

Third Semester

Environment and Industrial Safety

SAFETY CULTURE AND BEHAVIOUR BASED SAFETY

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the questions.

1. According to Maslow's Hierarchy of Needs, which need must be satisfied before an individual seeks esteem and recognition?

   (a) Physiological needs

   (b) Safety needs

   (c) Love and belonging needs

   (d) Self-actualization needs

2. The tendency for individuals to attribute their successes to internal factors and their failures to external factors is known as:

   (a) Self-serving bias

   (b) Fundamental attribution error

   (c) Halo effect

   (d) Projection

3. Which of the following is NOT a common stage in the team development process (Tuckman's model)?

(a) Forming (b) Storming

(c) Performing (d) Conforming

4. The grapevine is an example of:

(a) Formal communication

(b) Informal communication

(c) Upward communication

(d) Downward communication

5. In the context of behavior-based safety, positive reinforcement is used to:

(a) Punish unsafe behaviors

(b) Increase the likelihood of safe behaviors

(c) Identify root causes of incidents

(d) Analyze accident trends

6. The science of designing tools, machines, and work environments to fit the human body is called:

(a) Ergonomics (b) Physiology

(c) Anthropometry (d) Biomechanics

7. The measure of the smallest space needed for a person to perform a task comfortably is known as:

(a) Reach envelope (b) Work envelope

(c) Personal space (d) Anthropometric dimension

8. The loss of work efficiency due to fatigue or boredom is referred to as:

(a) Mental strain (b) Physical strain

(c) Monotony (d) Stress

9. In work station design, the distance between a worker's elbow and the work surface should be:

(a) Minimized to reduce reach

(b) Maximized to avoid strain

(c) Adjusted to individual preference

(d) Kept within a specific range for optimal comfort and posture

10. The concept of "design for everyone" aims to create products and environments that are usable by:

(a) The majority of the population

(b) People with disabilities only

(c) People of a specific age group

(d) The widest possible range of people, including those with diverse abilities and needs

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

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

11. (a) Describe the role of learning in shaping individual behavior and explain different types of learners.

Or

(b) What are attitudes and how are they formed? Discuss their components and influence on workplace behavior.

12. (a) Explain informal groups in organizations: their emergence, functions, and impact on effectiveness.

Or

(b) Describe the communication process and its key elements. What are the barriers to effective communication and how can they be overcome?

13. (a) Discuss safety culture and its importance in promoting safe behaviors. What factors contribute to a positive safety culture?

Or

(b) Explain safety coaching through observation and feedback. What are the key steps and how can it improve safety performance?

14. (a) Discuss the principles of motion economy and their application in work design for improved efficiency and reduced fatigue.

Or

(b) Explain the importance of proper seating arrangements and work surface design for ergonomic comfort and preventing musculoskeletal disorders.

15. (a) Discuss the concept of "Design for Everyone" and its importance in creating inclusive workspaces.

Or

(b) Explain ergonomic considerations for designing workspaces for seated workers, including adjustments to promote comfort and prevent fatigue.

Part C

$(5 \times 8 = 40)$

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

16. (a) Discuss Maslow's, Herzberg's and McClelland's theories of motivation and their application to enhance employee motivation and performance.

Or

(b) Explain the concept of perception, factors influencing it, and the impact of perceptual biases on decision-making and relationships in the workplace.

17. (a) Describe different types of teams commonly found in organizations (functional, cross-functional, self-managed, virtual), their advantages, disadvantages, and suitability.

Or

(b) Discuss techniques for resolving conflicts within groups and teams, emphasizing the role of communication and negotiation.

18. (a) Explain behavior-based safety (BBS) and its key principles. How can BBS be integrated with other management systems for a holistic approach?

Or

(b) Describe the role of social comparison feedback in behavior-based safety programs and its potential to motivate employees and create a positive safety culture.

19. (a) Discuss the application of ergonomic principles to the design of work benches, seating arrangements, and electrical panel layouts to improve worker comfort, safety, and productivity.

Or

(b) Explain the concept of machine foundations and factors to consider in their design, such as soil conditions, vibration levels and dynamic loads.

20. (a) Discuss the concept of personal space and its importance in workplace design, considering cultural factors, individual preferences, and work tasks.

Or

(b) Explain effectiveness and cost-effectiveness in work design, and how to evaluate ergonomic interventions in terms of worker well-being and return on investment.

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C–5148	Sub. Code
	30734

M.B.A. DEGREE EXAMINATION, APRIL 2025

Third Semester

Environment and Industrial Safety

SAFETY IN OIL AND GAS SECTOR

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the questions.

1. Which segment of the oil and gas industry focuses on the refining and distribution of petroleum products?

   (a) Midstream (b) Downstream

   (c) Upstream (d) Retail

2. What is the primary purpose of a Job Safety Analysis (JSA) in the oil and gas industry?

   (a) To identify potential hazards and develop control measures for a specific task

   (b) To investigate the root cause of an accident

   (c) To assess the overall safety performance of a company

   (d) To train employees on emergency response procedures

3. Which safety analysis method involves systematically identifying potential deviations from normal operating conditions and their consequences?

   (a) HAZOP (Hazard and Operability Analysis)

   (b) Root Cause Analysis (RCA)

   (c) Job Safety Analysis (JSA)

   (d) Failure Mode and Effects Analysis (FMEA)

4. What is the main goal of reliability analysis in the oil and gas industry?

   (a) To reduce the cost of maintenance

   (b) To increase production rates

   (c) To improve equipment and system performance and prevent failures

   (d) To comply with environmental regulations

5. Which regulatory agency is responsible for overseeing offshore safety in the United States?

   (a) EPA (Environmental Protection Agency)

   (b) OSHA (Occupational Safety and Health Administration)

   (c) BSEE (Bureau of Safety and Environmental Enforcement)

   (d) MMS (Minerals Management Service)

6. What is the primary focus of the "safety case" regime in offshore safety regulations?

   (a) Documenting all safety incidents that have occurred

   (b) Demonstrating that risks have been assessed and controlled to an acceptable level

   (c) Providing detailed instructions for emergency response

   (d) Training offshore workers on safety procedures

7. Which of the following is a common organizational factor that can contribute to accidents in the oil and gas industry?

(a) Fatigue

(b) Inadequate safety culture

(c) Lack of experience

(d) Poor communication

8. What is the purpose of a "hot work" permit in the oil and gas industry?

(a) To authorize work in high-temperature environments

(b) To control work involving open flames or sparks

(c) To allow work during hot weather conditions

(d) To permit overtime work for critical operations

9. What is the leading cause of fatalities in the oil and gas industry?

(a) Struck-by incidents

(b) Falls from heights

(c) Transportation accidents

(d) Confined space accidents

10. Which of the following is an example of a lagging indicator in safety performance measurement?

(a) Number of near-miss reports

(b) Employee safety training hours

(c) Number of lost-time injuries

(d) Safety audit scores

Part B (5 × 5 = 25)

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

11. (a) Explain the concept of "product hazard classification" and its significance in ensuring safety in the oil and gas industry.

Or

(b) Explain the "bathtub hazard curve" and its implications for safety management.

12. (a) Explain the concept of "Job Safety Analysis (JSA)." Describe its steps and how it is used to identify and control hazards in specific tasks.

Or

(b) Explain Failure Mode and Effects Analysis (FMEA) and its role in improving reliability.

13. (a) Who are the key offshore safety regulators in your country and what regulations do they enforce?

Or

(b) Describe the concept of "situational awareness" and its importance in offshore safety.

14. (a) Explain how group factors (e.g., team dynamics, communication) can influence safety performance in the oil and gas industry.

Or

(b) What are the common hazards of explosions and fires in oil and gas, and what safety measures can be implemented?

15. (a) What are the hazards of confined spaces in the oil and gas industry and what safety precautions are needed?

Or

(b) What are the safety risks associated with poor lighting in oil and gas operations? How can adequate lighting be ensured to prevent accidents?

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

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

16. (a) Discuss the main principles of safety management in the oil and gas industry and their importance.

Or

(b) Describe the typical organization and tasks of a safety department within an oil and gas company. How do these contribute to overall safety management?

17. (a) Discuss the concept of "interface safety analysis" and its importance in complex oil and gas projects involving multiple contractors or stakeholders.

Or

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

18. (a) Analyze the Piper Alpha disaster: key causes, lessons learned, and changes in regulations.

Or

(b) Discuss the challenges faced by offshore workers in maintaining situational awareness. What strategies can be implemented to improve their understanding of risks and hazards?

19. (a) Discuss the role of organizational factors in oil and gas accidents and how they influence safety.

Or

(b) Discuss the concept of "oil field fatalities analysis." How is this data used to identify trends and develop targeted safety interventions?

20. (a) Discuss the importance of accident data collection and analysis in identifying trends, assessing risks, and developing safety interventions.

Or

(b) Explain the concept of "accident data analysis." How are statistical methods and tools used to analyze accident data and draw meaningful conclusions for safety improvement?

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C–5149	Sub. Code
	30735

M.B.A. DEGREE EXAMINATION, APRIL 2025

Third Semester

Environment and Industrial Safety

SAFETY ASPECTS IN INDUSTRIAL PLANT LAYOUT DESIGN

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. In plant layout design, what is the primary consideration for determining the safe distance between equipment and structures?

   (a) Aesthetic appeal

   (b) Cost of construction

   (c) Potential hazards and risks

   (d) Availability of space

2. Which industry requires the most stringent safety measures in plant layout due to the potential for explosive atmospheres?

   (a) Food processing

   (b) Metal powder manufacturing

   (c) Pharmaceutical

   (d) Engineering

3. Which factor is LEAST important in selecting a plant location for a water treatment facility?

(a) Proximity to water source

(b) Availability of skilled labor

(c) Distance to major highways

(d) Local environmental regulations

4. What is the main purpose of conducting Non-Destructive Testing (NDT) on plant equipment?

(a) To identify defects without damaging the equipment

(b) To determine the equipment's lifespan

(c) To assess the equipment's market value

(d) To train maintenance personnel

5. Which manufacturing approach emphasizes producing goods only when customer orders are received?

(a) Just-In-Time (JIT)

(b) Total Quality Management (TQM)

(c) Agile Manufacturing (AM)

(d) Computer-Integrated Manufacturing (CIM)

6. What is the primary goal of a facility layout model in plant design?

(a) To create a visually appealing layout

(b) To minimize construction costs

(c) To optimize the flow of materials and people

(d) To comply with building codes

7. Which type of ventilation system is most effective for removing localized contaminants at their source?

(a) General ventilation

(b) Local exhaust ventilation

(c) Dilution ventilation

(d) Natural ventilation

8. What is the primary objective of the "Shine" step in the 5S methodology?

(a) To remove unnecessary items from the workplace

(b) To clean and maintain the workplace

(c) To establish standardized procedures

(d) To sustain improvements over time

9. Which ergonomic principle is most relevant to the design of workstations for manual material handling tasks?

(a) Minimizing lifting distances

(b) Providing adjustable chairs

(c) Ensuring adequate lighting

(d) Reducing noise levels

10. What is the purpose of 'sheaves" in a lifting system?

(a) To reduce the load on the hoisting mechanism

(b) To change the direction of the lifting force

(c) To prevent the rope from slipping

(d) To increase the lifting speed

Part B (5 × 5 = 25)

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

11. (a) Explain "safe distance" in plant layout design and factors influencing its determination.

Or

(b) Discuss safety considerations specific to pharmaceutical plant layout for preventing cross-contamination.

12. (a) What factors influence site selection for a metal powder manufacturing facility, considering potential hazards?

Or

(b) What are the advantages and disadvantages of using die penetration testing for plant inspection?

13. (a) Explain the role of "unit loads" and "containers" in efficient and safe material handling within a manufacturing plant.

Or

(b) Describe JIT and TQM principles and their impact on facility design.

14. (a) Discuss the importance of proper illumination in industrial workplaces, factors affecting lighting quality, and its impact on safety and Productivity.

Or

(b) Describe preventive maintenance's role in ensuring safe working conditions and accident prevention.

15. (a) Explain the principles of safe manual lifting to prevent injuries.

Or

(b) Explain why regular inspection and maintenance of lifting devices are crucial, highlighting the risks of faulty equipment.

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

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

16. (a) Discuss the importance of safe equipment layout in process industries, with examples.

Or

(b) Compare safe layout considerations for construction and food processing industries.

17. (a) Analyze factors influencing plant location selection, focusing on territorial, environmental, and logistical factors.

Or

(b) Discuss the significance of NDT in plant equipment safety, explaining how it detects flaws and prevents accidents.

18. (a) Compare and contrast the CORELAP, and CRAFT methods for computerized plant layout design.

Or

(b) Outline the facility design process, from activity analysis to personnel services. Explain the importance of planning strategies.

19. (a) Explain the difference between "local" and "exhaust" ventilation, their applications, and factors influencing selection.

Or

(b) Discuss 5S principles and their role in good housekeeping, mentioning accidents due to poor housekeeping and cleaning methods.

20. (a) Discuss design considerations for safe material handling systems, emphasizing ergonomic principles and equipment selection factors.

Or

(b) Describe the safety considerations for team lifting and carrying of heavy objects.

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C–5150	Sub. Code
	30736A/ 70136A

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

Third Semester

SAFETY MANAGEMENT SYSTEM

(Common for MBA (E & IS)/M.Sc. (IS & H))

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. What is the primary focus of the OHSAS 18001 standard?

   (a) Environmental management

   (b) Quality management

   (c) Occupational health and safety management

   (d) Financial risk management

2. Which accident causation theory emphasizes a chain of events leading to an accident, where each event is dependent on the previous one?

   (a) Domino Theory

   (b) Human Factors Theory

   (c) Systems Theory

   (d) Heinrich's Triangle

3. What is the main purpose of a safety audit?

   (a) To reward employees for safe behavior

   (b) To punish employees for unsafe behavior

   (c) To systematically evaluate an organization's safety performance and compliance

   (d) To create marketing materials for safety programs

4. What is the term for the process of transferring information and understanding between individuals or groups about safety-related matters?

   (a) Safety training

   (b) Safety communication

   (c) Safety inspection

   (d) Safety audit

5. What is the purpose of a "toolbox talk" in safety?

   (a) To provide in-depth training on a complex safety topic

   (b) To discuss a specific safety issue in a brief, informal setting

   (c) To conduct a formal safety audit

   (d) To write a detailed safety report

6. Which type of training is designed to familiarize new employees with workplace hazards and safety procedures?

   (a) Refresher training

   (b) On-the-job training

   (c) Induction training

   (d) Supervisor training

7. Which of the following is NOT a common method of employee participation in safety?

(a) Safety committees

(b) Safety suggestion schemes

(c) Performance appraisals

(d) Safety incentive programs

8. What is the term for the process of including safety, health and environment (SHE) issues in labor contract negotiations?

(a) Collective bargaining

(b) Safety audit

(c) Risk assessment

(d) Job safety analysis

9. What is the term for the shared values, beliefs, and attitudes that shape safety behavior within an organization?

(a) Safety climate

(b) Safety culture

(c) Safety policy

(d) Safety program

10. Which of the following is NOT a human factor that can contribute to accidents?

(a) Fatigue

(b) Stress

(c) Proper training

(d) Complacency

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

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

11. (a) Explain "Management by Objectives" (MBO) in safety management and its use for improvement.

Or

(b) Discuss "Heinrich's Triangle" in accident prevention, its limitations and implications for modern safety.

12. (a) Describe the role of "Safety Committees" in organizations: functions, composition and contributions to safety.

Or

(b) Explain "barriers and breakdowns in communication" related to safety, common challenges and solutions.

13. (a) What are the key considerations in assessing training needs for safety, health and environment (SHE)?

Or

(b) Discuss the importance of evaluating safety training programs, methods for assessment and using feedback for improvement.

14. (a) Explain "Safety Culture" and its influence on safety behavior, detailing key elements.

Or

(b) Discuss the role of "promotional methods" in safety, with examples of effective ways to raise awareness and motivate employees.

15. (a) Explain "Perception of Danger" and "Acceptance of Risk" in behavioral safety and how they influence decisions.

Or

(b) Discuss management's role in motivating safe employee behavior and strategies to encourage a positive safety climate.

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

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

16. (a) Discuss the "Domino Theory" of accident causation and its implications for workplace accident prevention.

Or

(b) Explain "risk assessment" in safety management: steps, contribution to hazard prioritization.

17. (a) Describe different types of safety plans (strategic, operational, emergency response) and how they contribute to safety management.

Or

(b) Explain Haddon's Principle and its application in accident prevention using the four phases of Haddon's Matrix.

18. (a) What are "modern methods of safety training"? Discuss benefits and challenges of e-learning and simulations.

Or

(b) Explain "Job Safety Analysis" (JSA): steps and how it identifies and controls task-specific hazards.

19. (a) Discuss the importance of "Safety Suggestion Schemes" in promoting employee participation and how to design effective schemes.

Or

(b) Explain "performance appraisal" in safety and its use to assess and improve employee safety behavior.

20. (a) Explain how "individual differences" influence safety behavior, considering factors like personality, attitude, and experience.

Or

(b) Discuss ethical issues in safety management, the importance of ethical decision-making, and examples of ethical dilemmas.

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C–5152

Sub. Code
30736C

M.B.A. DEGREE EXAMINATION, APRIL 2025

Third Semester

Environment and Industrial Safety

DISASTER MANAGEMENT

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the questions.

1. Which of the following is NOT a man-made disaster?

   (a) Gas leak

   (b) Tsunami

   (c) Oil spill

   (d) Forest fire (caused by human activity)

2. Vulnerability in the context of disasters refers to

   (a) The likelihood of a disaster occurring

   (b) The susceptibility of a community or asset to the impacts of a hazard

   (c) The financial cost of a disaster

   (d) The effectiveness of emergency response

3. Which of the following is the first step in the risk management process?

(a) Risk reduction

(b) Risk identification

(c) Risk transfer

(d) Risk assessment

4. Which phase of the disaster cycle focuses on restoring normalcy and rebuilding infrastructure?

(a) Response (b) Recovery

(c) Mitigation (d) Preparedness

5. What is the purpose of retrofitting buildings in disaster management?

(a) To construct new buildings in safer locations

(b) To upgrade existing buildings to make them more resistant to hazards

(c) To demolish unsafe buildings

(d) To provide financial assistance for building repairs

6. Which type of disaster is caused by the rapid movement of a large mass of snow down a slope?

(a) Landslide (b) Avalanche

(c) Tsunami (d) Flood

7. What is the primary objective of awareness generation programs in disaster management?

(a) To train emergency responders

(b) To conduct scientific research on disasters

(c) To educate the public about disaster risks and preparedness measures

(d) To provide financial aid to disaster victims

8. Which remote sensing technique is commonly used for assessing the extent of damage after a disaster?

(a) GPS (Global Positioning System)

(b) LiDAR (Light Detection and Ranging)

(c) Satellite imagery

(d) Ground-penetrating radar

9. Which UN agency is primarily responsible for coordinating international humanitarian assistance in response to disasters?

(a) UNDP

(b) UNDRR

(c) OCHA (Office for the Coordination of Humanitarian Affairs)

(d) WHO

10. What is the role of the State Disaster Management Authority (SDMA) in India?

(a) To formulate national disaster management policies

(b) To coordinate disaster response at the state level

(c) To provide financial assistance to disaster victims

(d) To conduct research on disaster mitigation

Part B

$(5 \times 5 = 25)$

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

11. (a) Define "hazard" and "disaster," explaining the key differences with examples.

Or

(b) Discuss the classification of natural disasters, providing a brief description and examples of each category.

12. (a) Explain the disaster management cycle, describing each phase and its significance.

Or

(b) Discuss the multi-disciplinary nature of disaster management and the roles of different disciplines involved.

13. (a) Explain the basic principles of disaster management and how they guide decision-making and actions.

Or

(b) Discuss the role of building design and construction in mitigating earthquake impact, highlighting key features.

14. (a) Describe the role of GIS and remote sensing in disaster management for risk assessment, preparedness, and response.

Or

(b) Explain the importance of training and drills for disaster preparedness, mentioning different types and their benefits.

15. (a) Discuss the UN's role in disaster management, highlighting key agencies involved in DRR and their mandates.

Or

(b) Describe India's disaster administration structure at national, state, and district levels, mentioning key institutions and mechanisms.

Part C (5 × 8 = 40)

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

16. (a) Discuss "global climate extremes" as natural disasters, focusing on their increase due to climate change, consequences, and preparedness measures.

Or

(b) Analyze various "man-made disasters" caused by industrial accidents, providing examples, challenges, and prevention/mitigation strategies.

17. (a) Explain "risk identification" in disaster management, describing methods, tools, and its contribution to effective strategies.

Or

(b) Discuss the importance of "recovery and reconstruction" in the disaster cycle, challenges, considerations, and how to make efforts more sustainable.

18. (a) Elaborate on "disaster management policy" and its role in guiding national and state efforts, including key components.

Or

(b) Explain different types of "early warning systems," their effectiveness in providing timely alerts, and ways to improve their accuracy and reach.

19. (a) Discuss the role of "mini projects on disaster risk assessment and preparedness" in enhancing community resilience, identifying vulnerabilities, and developing tailored plans.

Or

(b) Explain "disaster risk assessment": steps involved and how results inform disaster management strategies.

20. (a) Discuss the role of "allied governmental bodies" like NDRF and SDRF in India's disaster management, focusing on their contributions to preparedness and response.

Or

(b) Analyze the role of "disaster mitigation funds" at state and national levels in India, their utilization, and challenges in allocation and disbursement.

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C–5153	Sub. Code
	30737

M.B.A. DEGREE EXAMINATION, APRIL 2025

Third Semester

Environment and Industrial Safety

FOOD HYGIENE AND SANITATION

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** questions.

1. The presence of E. coli in food indicates contamination from which source?

   (a) Air (b) Fecal matter

   (c) Soil (d) Packaging

2. Which of the following is a method for assessing the texture of food?

   (a) pH meter (b) Refractometer

   (c) Texturometer (d) Spectrophotometer

3. Cleaning and sanitizing procedures in food processing are primarily aimed at

   (a) Improving product appearance

   (b) Reducing microbial load

   (c) Enhancing flavor

   (d) Increasing shelf life

4. Hazard Analysis Critical Control Point (HACCP) is a system for

(a) Marketing food products

(b) Managing food waste

(c) Ensuring food safety

(d) Regulating food prices

5. Which international organization sets standards for food quality and safety management systems?

(a) WHO (World Health Organization)

(b) FAO (Food and Agriculture Organization)

(c) ISO (International Organization for Standardization)

(d) WTO (World Trade Organization)

6. The Food Safety and Standards Act (FSSA) in India was enacted in:

(a) 2006 (b) 2011

(c) 2015 (d) 2020

7. Which of the following is NOT a core principle of Good Manufacturing Practices (GMP)?

(a) Documentation (b) Training

(c) Validation (d) Advertising

8. The term "adulteration" in the context of food refers to:

(a) Adding vitamins and minerals

(b) Mixing different types of food

(c) Tampering with food to reduce its quality

(d) Cooking food at high temperatures

9. A food product recall is typically ordered by

(a) Retailers

(b) Consumers

(c) Regulatory authorities

(d) Food manufacturers

10. The purpose of a food label is to provide consumers with information about

(a) The product's ingredients

(b) Nutritional content

(c) Allergens

(d) All of the above

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

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

11. (a) Explain the concept of food quality and its various dimensions (sensory, nutritional, safety, etc.).

Or

(b) Discuss the role of instrumental analysis in determining the chemical and physical properties of food.

12. (a) Discuss the different types of biological contaminants (bacteria, viruses, parasites) that can cause foodborne illness.

Or

(b) Explain the principles of cleaning and sanitizing in food processing facilities.

13. (a) Explain the concept of critical limits in HACCP and their significance in controlling food safety hazards.

Or

(b) Discuss the role of Good Veterinary Practices (GVP) in ensuring the safety and quality of animal-derived food products.

14. (a) Discuss the role of the Bureau of Indian Standards (BIS) in setting standards for food products in India.

Or

(b) Explain the concept of "food fraud" and the measures taken to prevent it.

15. (a) Explain the process of conducting a food safety audit and the different types of audits.

Or

(b) Discuss the role of third-party certification bodies in verifying compliance with food safety standards.

Part C (5 × 8 = 40)

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

16. (a) Elaborate on the impact of environmental factors (temperature, humidity, light) on food quality.

Or

(b) Describe the use of microbiological testing to assess the safety and shelf-life of food products.

17. (a) Describe the role of pest control in maintaining food sanitation and preventing contamination.

Or

(b) Discuss the importance of proper waste disposal and wastewater management in food processing plants.

18. (a) Explain the difference between qualitative and quantitative risk assessment in food safety.

Or

(b) Discuss the challenges of implementing and maintaining effective food safety management systems in Small and Medium-sized Enterprises (SMEs).

19. (a) Describe the role of the World Trade Organization (WTO) in regulating international trade of food products.

Or

(b) Discuss the importance of labeling regulations in providing consumers with accurate information about food products.

20. (a) Describe the procedures involved in a food product recall in case of a safety or quality issue.

Or

(b) Discuss the challenges and opportunities in exporting food products from India to international markets.

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