C–0663	Sub. Code
	30615A/30715A

M.Sc./M.B.A. DEGREE EXAMINATION, NOVEMBER 2023.

First Semester

Environment and Industrial Safety

OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT

(Common for M.B.A. (E & IS)/M.Sc. (ISH))

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define risk factors.
2. Write the uses of industrial audiometry.
3. What is the purpose of dust sample collection devices?
4. Write the purpose of air sampling instruments.
5. Define bacterial agents.
6. Define Ergonomical hazards.
7. What is the purpose of audiometric tests?
8. How do toxic gases affect human health in the industry?
9. Define work organization.
10. Define Fatigue.

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

Answer **all** questions.

11. (a) Discuss about Industrial audiometry, vibration and its types.

Or

(b) Write short notes on non-ionizing radiation and effects.

12. (a) Explain about gas and vapor monitors in chemical-related hazards.

Or

(b) Write short notes on Personal sampling methods of control.

13. (a) Explain about laboratory safety program.

Or

(b) Write short notes on biological safety cabinets.

14. (a) Write short notes on Occupational related diseases.

Or

(b) Write short notes on toxicity, gas poisoning, their effects and prevention.

15. (a) Discuss about the evaluation of physiological requirements of jobs.

Or

(b) Write short notes on work organization.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Discuss in detail about general control methods, training and education in chemical hazards.

Or

(b) Explain in detail about the concepts of Recongnition of chemical hazard.

17. (a) Discuss in detail

(i) Cardio Pulmonary Resuscitation

(ii) Industrial toxicology.

Or

(b) Explain about systemic and chronic effects, temporary and cumulative effects.

18. (a) Briefly discuss about

(i) Sound measuring instruments

(ii) Noise control program.

Or

(b) Explain in detail about non-ionizing radiations, effects, types and radar hazards.

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C–0666	Sub. Code
	30721

M.B.A. DEGREE EXAMINATION, NOVEMBER 2023.

Second Semester

Environmental Industrial Safety

EHS ACTS, LAWS AND REGULATIONS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. Define Factory as per Factories Act 1948.

2. Whom does Public Liability Insurance Act apply?

3. What is the objective of National Environment Tribunal Act 1995.

4. Define Boiler as per Indian Boilers Act 1923.

5. Give four examples of Bio-Medical waste.

6. Explain Dangerous Occurrence with examples.

7. List four hazardous processes as per Factories Act 1948.

8. Write the background for Environment Protection Act 1986.

9. Who is a bulk consumer as per E-Waste (Management and Handling) Rules 2011

10. What is partial disablement as per Workmen Compensation Act 1923?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write brief note on Powers of Inspectors (Factories Act 1948).

Or

(b) Explain statutory requirement for protection of eyes.

12. (a) Write the obligations of an Occupier as per Factories Act 1948.

Or

(b) Write the obligations of Manager of Factory as per Factories Act 1948.

13. (a) Write brief note on Ventilation and Temperature requirements as per Factories Act 1948.

Or

(b) Write salient features of Batteries (M&H) Rules 2001.

14. (a) Write the noise levels prescribed by Noise Rules 2000.

Or

(b) Write brief note on The Dangerous Machines Act 1923.

15. (a) Write brief note on Welfare measures prescribed by Factories Act.

Or

(b) What are the responsibilities of Safety Officer as per Factories Act and Rules?

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Develop a compliance checklist for Factories Act and Rules.

Or

(b) Develop a compliance checklist for Air and Water Acts.

17. (a) Write the contents of Safety Report under MSIC Rules 1989.

Or

(b) Write the details of manifest system under Hazardous Waste (M&H) Rules.

18. (a) List at least ten notified Occupational Diseases as per Factories Act.

Or

(b) Write an essay on welfare measures and other conditions of service of building workers.

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C–0667	Sub. Code
	30722

M.B.A. DEGREE EXAMINATION, NOVEMBER 2023.

Second Semester

Environment and Industrial Safety

INTERNATIONAL MANAGEMENT OF HEALTH AND SAFETY

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Define legal framework.

2. What is framework

3. List the agency workers' responsibilities.

4. Differentiate Employee and Employer.

5. Define a safety culture.

6. What is risk assessment?

7. Who are all LONE WORKERS?

8. What is active monitoring?

9. Define ILO.

10. Mention the important role of regulatory authorities.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Discuss in detail about managing health.

Or

(b) Briefly explain about key elements of health policy.

12. (a) How to monitor health and safety? – Explain.

Or

(b) Describe in detail about Legal Considerations.

13. (a) Explain the development of positive health and safety culture.

Or

(b) Write short notes on the objectives of risk assessment.

14. (a) Briefly discuss about general control measures.

Or

(b) Summarize the traditional approach to measuring health and safety.

15. (a) Explain in detail about ILO conventions and recommendations.

Or

(b) Discuss in detail about key characteristics of a health management system.

Part C (3 × 10 = 30)

Answer **all** the questions.

16. (a) Discuss the role and function of external agencies.

Or

(b) Briefly discuss about the safety committees (Regulations 1977).

17. (a) Explain in detail about the risk assessment process.

Or

(b) Summarize the principles of prevention and explain the safe system of work.

18. (a) Briefly discuss the role and function of ILO.

Or

(b) Explain

(i) International Management of safety and

(ii) International management of health.

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C–0668	Sub. Code
	30723

M.B.A. DEGREE EXAMINATION, NOVEMBER 2023.

Second Semester

Environment and Industrial Safety

SAFETY IN MATERIAL HANDLING

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What are the hazards in steel strapping?

2. List types of cranes.

3. List types of slings

4. List safety devices in powered industrial trucks

5. Mention personal protection equipment required during hoist operation

6. What is Load Diagram?

7. What you understand from SWL marking on cranes?

8. What are the hazards in conveyor operation?

9. What is the role of a rigger?

10. Is pushing a load is better than pulling? Write the reason.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write reasons for crane accidents.

Or

(b) Write brief note on sling inspection.

12. (a) What are the factors affecting lifting capability of a crane?

Or

(b) Explain pre-lifting plan.

13. (a) Discuss types of derricks.

Or

(b) List hazards in storage and handling of cryogenic liquids.

14. (a) What are the ergonomic considerations to be applied in manual material handling?

Or

(b) Write a note on Forklift pre-start inspection.

15. (a) Explain function of outriggers in cranes.

Or

(b) List pinch points in Belt Conveyors.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Develop a annual inspection plan for overhead electric cranes.

Or

(b) Write about ergonomic arrangements to be made for safe manual handling in a assembly line.

17. (a) Develop a safe operation procedure for LPG powered Forklifts.

Or

(b) What are the safety precautions to be taken during heavy object lifting by a mobile crane?

18. (a) Write do's and don'ts for a Rigger.

Or

(b) Write on Prevention of injuries during Team Lifting and Carrying heavy objects.

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C–0669	Sub. Code 30724

M.B.A. DEGREE EXAMINATION, NOVEMBER 2023.

Second Semester

Environment and Industrial Safety

ENVIRONMENTAL STUDIES

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** the questions.

1. State the reasons for public awareness of the environment.

2. What are the types of natural resources?

3. List out some renewable resources.

4. Mention some impacts of mining on the forest.

5. What is the food web?

6. Describe hotspots in biodiversity.

7. List out some pollutants.

8. List out some sources for nuclear pollution.

9. What do you mean by ozone layer depletion?

10. What is E-waste?

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Define green advocacy and green marketing and explain them in detail.

Or

(b) Discuss how poverty, population growth are associated with the environment.

12. (a) List out the function of the forest and its uses in detail.

Or

(b) What is deforestation? and discuss the consequence of deforestation.

13. (a) Discuss biogeographical classification in India.

Or

(b) Explain in detail about ecosystem diversity.

14. (a) Discuss control measures for air pollution.

Or

(b) What are the causes of thermal pollution? Explain them in detail.

15. (a) Discuss the effect and control measures of nuclear pollution.

Or

(b) Discuss evaluation scheme for surveying insects, and birds.

Part C

$(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) Explain in detail about the significance of environmental studies.

Or

(b) List out the reasons for declining of groundwater and explain them individually.

17. (a) Discuss the effects and management of drought and flood.

Or

(b) Discuss poaching of wildlife and problems associated with habitat loss.

18. (a) What is noise pollution? Discuss its cause and control measures.

Or

(b) Explain the technique of study of the local ecosystem.

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C–0670	Sub. Code
	30725C

M.B.A. DEGREE EXAMINATION, NOVEMBER 2023.

Second Semester

Environment and Industrial Safety

HAZARD IDENTIFICATION, RISK ASSESSMENT AND RISK CONTROL

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define Hazard.

2. Define Risk.

3. What is Process Hazard Analysis?

4. Name PHA methods.

5. Define Human Reliability Analysis.

6. What are the SIL determination techniques?

7. Explain Failure Mode effect Analysis.

8. What is the use of Risk Priority Number?

9. When will you use Hazop study?

10. What is Electrical area Classification?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain functional safety.

Or

(b) Explain ALARP.

12. (a) Compare various PHA methods.

Or

(b) Explain preliminary Hazard analysis.

13. (a) How Risk priority Numbers are worked out?

Or

(b) Briefly explain Safety Integrity Level determination.

14. (a) Differentiate FMEA and FMECA.

Or

(b) What are the guidewords used in Hazop study?

15. (a) Write note on HAZOP methodology.

Or

(b) Explain importance of Third Party Certification of Instruments.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Write note on Safety Life Cycle.

Or

(b) Enumerate instruments used for combustible / flammable gas detection.

17. (a) Write note on Layer of Protection Analysis and give an example.

Or

(b) Differentiate Risk Assessment and Risk Management.

18. (a) Write note on Explosion Protection devices.

Or

(b) Write note on Fault Tree Analysis with an example.

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C–0671	Sub. Code
	30731

M.B.A. DEGREE EXAMINATION, NOVEMBER 2023.

Third Semester

Environmental and Industrial Safety

CONSTRUCTION SAFETY

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** the questions.

1. Effect of toxic limes in the construction field.

2. What is BOCW Act 1996?

3. Which soil test is mostly used to understand the soil quality?

4. Name the important application of deep foundations.

5. How many types of hot mix plants are there?

6. Importance of slings

7. List the applications of structural steel works.

8. What is a scaffold?

9. Define Ergonomics.

10. List the immediate and initial treatments for electric shock.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Briefly discuss about occupational health and hygiene.

Or

(b) Elaborate on first aid legal requirement in construction safety.

12. (a) How to handle the explosives — discuss briefly.

Or

(b) In a restricted space situation, briefly outline the entry and rescue equipment.

13. (a) Methods for controlling traffic while roads are being repaired. Discuss in brief.

Or

(b) Differentiate mobile cranes and tower cranes.

14. (a) Give a thorough explanation of erection equipment.

Or

(b) Briefly describe the use, significance. and requirement for leather goods.

15. (a) Explain in detail about cartridge-operated tools.

Or

(b) When is heavy physical work required? And discuss it in detail about it.

Part C

$(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) List the common hazards that happened at the construction field. And explain any one hazard with prevention measures.

Or

(b) What is excavation? What are all the general measures and precautions that need to be considered? Describe in detail.

17. (a) List the safety devices and give a brief explanation about any two.

Or

(b) Describe the following

(i) Casting

(ii) Suspension Ropes.

18. (a) Discuss safety precautions in a detailed manner.

Or

(b) Explore the need for construction safety and discuss in detail about PPE.

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C–0672	Sub. Code
	30732

M.B.A. DEGREE EXAMINATION, NOVEMBER 2023.

Third Semester

Environment and Industrial Safety

INDUSTRIAL SAFETY AND PROCESS SAFETY MANAGEMENT

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. Name the occupational diseases.

2. Identify and list the important precautions to be followed in safety working.

3. What is occupational health?

4. Write short notes on hazardous energy control.

5. What is detail design?

6. Purpose of valves in pressure system design.

7. Discuss shortly about post-commissioning.

8. Define vibration.

9. What is a shutdown operation?

10. List the need for color coding in cylinders.

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

Answer **all** questions.

11. (a) How to do the investigations for industrial accidents— briefly discuss it.

Or

(b) Explain in detail human factors in machine equipment safety.

12. (a) Describe in detail about injury or incident.

Or

(b) What is hazardous energy control — explain with the required information.

13. (a) Write short notes on thermal relief.

Or

(b) Discuss in detail about the vent systems.

14. (a) Explain in detail about pipeline inspection.

Or

(b) List the commissioning problems and suggest suitable solutions.

15. (a) Discuss in detail about the operation of fired heaters.

Or

(b) What are all plant operations? Explain any one plant operation with the required information.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain in detail about general precautions to be taken by operators for safe working.

Or

(b) Explain the following (i) safety system and (ii) static electricity.

17. (a) Briefly discuss about pressure relief devices.

Or

(b) Describe the following (i) pressure piping system (ii) leak testing.

18. (a) What are underground pipes? Analyze the corrosion prevention for underground pipes.

Or

(b) What is NDT? Discuss any two NDT methods.

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C–0673	Sub. Code
	30733

M.B.A. DEGREE EXAMINATION, NOVEMBER 2023.

Third Semester

Environment and Industrial Safety

SAFETY CULTURE AND BEHAVIOUR BASED SAFETY

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. How to strengthen the safety culture?

2. Who will get benefits from seminars?

3. How to perform safety investigations?

4. Mention the critical role of the safety trainer.

5. Define BBS.

6. What is workplace safety?

7. Write two crucial roles of leadership.

8. Write short notes on program implementation.

9. List the important needs of safety education.

10. Name two major roles of private consulting agencies in safety training.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Describe in detail about special campaigns.

Or

(b) Explore the need and importance safety documents.

12. (a) Briefly discuss about behavior-based safety program.

Or

(b) Discover the necessary facts about workman's compensation costs.

13. (a) Briefly discuss about the BBS Phase 3-feedback.

Or

(b) Explain in detail about organization's safety culture.

14. (a) Explain in detail about BBS programs to the specific workplace.

Or

(b) What are all the important points to be considered for incentives and rewards?

15. (a) Define safety motivation and discuss in a detailed manner.

Or

(b) Elaborate on the need and significance of domestic safety.

Part C

$(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) Briefly discuss about the components of safety culture.

Or

(b) Describe the following :

(i) Key performance indicators and

(ii) Insurance premiums

17. (a) Explain the need, significance and responsibilities of the integrated safety management system.

Or

(b) Investigate the design and implementation of the behavioral safety process.

18. (a) What is STM? Explain any two STM methods in a detailed manner.

Or

(b) Describe in detail about employee involvement in safety culture.

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C–0674	Sub. Code
	30734

M.B.A. DEGREE EXAMINATION, NOVEMBER 2023.

Third Semester

Environment and Industrial Safety

COMPUTER AIDED HAZARD ANALYSIS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. How to do the hazard monitoring?

2. What is PHA?

3. List the applications of advanced instruments in computer-aided hazard analysis.

4. Write short notes on the detonation test.

5. What is FETI?

6. Define Reliability.

7. What is Jet Fire?

8. Write short notes on a two-phase release.

9. Effects of Pasadena – discuss shortly.

10. Define reactor.

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

Answer **all** the questions.

11. (a) Briefly discuss about Social benefits Vs. Technological Risk.

Or

(b) Explain in detail about HAZOP.

12. (a) Describe in detail about Impact sensitiveness Test with necessary information.

Or

(b) Discuss in detail about TGA.

13. (a) Explain in detail about Failure Mode and Effect Analysis.

Or

(b) Describe in detail about pool fire.

14. (a) Discuss the importance of heat radiation effects briefly.

Or

(b) Explain in detail about Jet Fire with the required information.

15. (a) Write short notes on the Bhopal disaster.

Or

(b) Describe in detail about Rasmussen Masses Report.

Part C (3 × 10 = 30)

Answer **all** the questions.

16. (a) Elaborately discuss about safety warning systems.

Or

(b) Explain the following

(i) Accelerated Rate Calorimeter and

(ii) Deflagration Test.

17. (a) Briefly discuss Fault Tree Analysis.

Or

(b) Analysis of the explosion effects and suggest suitable remedies and prevention methods.

18. (a) Explain in detail about past accident analysis.

Or

(b) List the hazardous industrial objects and briefly describe any two of them using the relevant details.

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C–0675	Sub. Code
	30735

M.B.A. DEGREE EXAMINATION, NOVEMBER 2023.

Third Semester

Environment and Industrial Safety

EVOLUTION OF MODERN SAFETY CONCEPTS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** the questions.

1. Define quality.

2. Write short notes on a safety inspection.

3. List the safety needs.

4. What is actualization?

5. Discuss shortly – risk control.

6. What are critical systems?

7. What is energy release theory?

8. Describe shortly about multilink events.

9. What is standby redundancy?

10. Discuss shortly about system reliability.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Briefly discuss about staff functions for safety.

Or

(b) Explain in detail about safety sampling.

12. (a) McGregor's Theory X and Theory Y – explain with the required information.

Or

(b) Describe in detail about contingency theory.

13. (a) Elaborately discuss about FMEA.

Or

(b) Write short notes on quantitative risk analysis.

14. (a) Explain in detail about human factors theory.

Or

(b) Briefly discuss about gross hazard analysis.

15. (a) Explain in detail about maintainability 114.

Or

(b) What is the mean time to failure and explain with relevant data?

Part C (3 × 10 = 30)

Answer **all** the questions.

16. (a) Explain in detail about management general safety concepts.

Or

(b) Briefly discuss about Herzberg's Motivational Theory.

17. (a) Identify the risk assessment concepts and explain with the required information.

Or

(b) Describe in detail about O.C. curves.

18. (a) How to investigate the accidents? – Explain the procedure with the required information.

Or

(b) Identify the need for modern safety concepts and explain in detail about combination theory.

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C–0676	Sub. Code
	30742

M.B.A. DEGREE EXAMINATION, NOVEMBER 2023.

Fourth Semester

Environment and Industrial Safety

HAZARDOUS WASTE MANAGEMENT

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. List out the characteristics of waste.

2. Define SDS.

3. What is flammability?

4. Mention any rules associated with the handling of biomedical waste.

5. List down the source of radioactive wastes.

6. List out some health effects related to nuclear radiation.

7. Define chemical oxidation.

8. What is metabolism in chemical treatment?

9. Define incineration.

10. List out some methods of risk assessment.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Explain in detail about storage and disposal of hazardous waste.

Or

(b) Write short notes on land disposal and secure landfills.

12. (a) Briefly discuss about fly ash handling rules.

Or

(b) Explain in detail about batteries management and handling rules.

13. (a) Describe measures of health hazards due to radioactive wastes.

Or

(b) Illustrate waste generation from nuclear plants.

14. (a) Discuss the chemical treatment process for MSW.

Or

(b) Explain in detail about principles of biodegradation of toxic waste.

15. (a) Discus leachate collection and removal process.

Or

(b) Illustrate in detail about landfill covers, incineration, and autoclave.

Part C

$(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) Explain in detail about the classification of chemicals with SDS and TREM cards.

Or

(b) Describe management and handling rules of municipal solid waste.

17. (a) Explain in detail about transportation, treatment, and disposal of radioactive wastes.

Or

(b) Discuss in detail about physiochemical processes for hazardous wastes.

18. (a) Explain in detail about groundwater contamination and remediation with its various steps involved.

Or

(b) Illustrate in detail about landfill design for solid and hazardous wastes.

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C–0677	Sub. Code
	30743

M.B.A. DEGREE EXAMINATION, NOVEMBER 2023.

Fourth Semester

Environmental and Industrial Safety

SAFETY MANAGEMENT IN HIGH HAZARDOUS AREAS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What is explosive-proof equipment?

2. Describe the online monitoring system.

3. Define EIC.

4. What is OSHA?

5. What is the purpose of nitrogen gas in the industry?

6. What is oil-immersed equipment?

7. Define explosion-proof enclosure.

8. Define limit energy.

9. What are NFPA standards?

10. List out advantages of intrinsic safety.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Briefly classify industrial equipment for hazardous gases and vapours.

Or

(b) Explain in detail about the installations of non-sparking equipment.

12. (a) Write short notes on the classification of hazardous areas.

Or

(b) Explain in detail about design regulations for explosion-proof equipment.

13. (a) Discuss intrinsically safe and oil-immersed equipment.

Or

(b) Illustrate in detail about faults in electrical equipment.

14. (a) Discuss conduits and cable seals in hazard area protection.

Or

(b) Explain in detail about pressurization and purging.

15. (a) Discuss various classes in NFPA standards.

Or

(b) Describe safety principles and electrical sparks.

Part C (3 × 10 = 30)

Answer **all** the questions.

16. (a) Discuss expert system for maintenance, online monitoring, troubleshooting, and safety assurance.

Or

(b) Explain in detail about flameproof equipment and design features for increased safety equipment.

17. (a) Describe emission degree with its types along with OSHA and NEC.

Or

(b) Illustrate in detail about permissible hot spot temperature and sand-filled installations.

18. (a) Discuss hazard isolation, intrinsic safety and their types.

Or

(b) Explain in detail about various intrinsically safe barrier types and its advantage.

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C–0678	Sub. Code
	30744

M.B.A. DEGREE EXAMINATION, NOVEMBER 2023.

Fourth Semester

Environment and Industrial Safety

SAFETY IN INDUSTRIAL PLANT LAYOUT DESIGN

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** the questions.

1. Define safe distance.

2. Discuss shortly about pesticides.

3. Define CMG.

4. How do we identify the location for waste treatment?

5. Benefits of the computerized layout.

6. Identify the uses of conveyors.

7. Purpose of air conditioning.

8. List the advantages of good illumination.

9. What are all the general safety consideration that needs to follow while handling chains?

10. Write short notes on alloy chain slings.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Discuss in detail about the blueprint stage in plant layout design.

Or

(b) Briefly discuss the significance an safety aspects of the engineering industry.

12. (a) Explain in detail about plant inspection.

Or

(b) Write short notes on propellants.

13. (a) Briefly discuss about warehouse operations.

Or

(b) Describe the following

(i) JIT

(ii) TQM.

14. (a) Mention the types of lighting and discuss the merits and demerits.

Or

(b) Locate the accidents due to poor housekeeping and discuss in depth.

15. (a) List the prevention methods for common injuries.

Or

(b) Conveying equipment installation and operation discuss briefly.

Part C

$(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) Briefly discuss the important safety aspects and design considerations that need to be followed in thermal power stations.

Or

(b) Elaborately discuss the following

(i) Magnetic particle method and

(ii) Die penetration test.

17. (a) Explain the material flow analysis in a detailed manner.

Or

(b) Identify the role of preventive maintenance in safety and explain the benefits of good housekeeping.

18. (a) Describe the following

(i) Prime movers and

(ii) Slings.

Or

(b) Distinguish manual and mechanical material handling and discuss the merits and demerits of mechanical material handling.

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C–1301	Sub. Code
	30711

M.B.A. DEGREE EXAMINATION, NOVEMBER 2023.

First Semester

Environmental and Industrial Safety

FIRE PREVENTION AND PROTECTION

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the questions.

1. In which zone of a candle flame no combustion takes place?

   (a) Innermost (b) Middle

   (c) Outermost (d) All the three zone

2. What is starving in extinguishing fire?

   (a) Removing fuel elements from fire

   (b) Preventing oxygen supply to fire

   (c) Adding fuel to the fire

   (d) Using water to cool the fire

3. How are portable fire extinguisher typically rated for their effectiveness?

   (a) By color

   (b) On a scale of 1-10

   (c) On a scale of numbers and class A and B

   (d) By shape

4. According to general guidelines, how often should a form-type fire extinguisher be recharged?

(a) Every 2 to 3 years (b) Every 1 year

(c) Every 5 years (d) Only when it is used

5. Which type of fire alarm system provides specific information about the location of the triggered detector or device?

(a) Conventional (b) Addressable

(c) Wireless (d) Analog

6. What do smoke detection system primarily sense to detect the presence of a fire?

(a) Heat (b) Smoke particles

(c) Flames (d) Gas

7. What is the minimum internal diameter in mm typically required for the vertical rising mains used in the firefighting arrangement within a building?

(a) 50 (b) 200

(c) 20 (d) 100

8. How much water flow per minute (in liters) is typically allowed through most fire hydrants?

(a) 950 (b) 250

(c) 380 (d) 1200

9. Which of the following is a type of fire escape primarily intended for use in case of fire, often found on a building's exterior?

(a) Rope ladder

(b) Knotted rope

(c) Balcony and smoke proof iron stairway

(d) Stairways

10. What types of equipment does FireServ offer installations, repairs and maintenance for to ensure compliance with fire safety codes?

(a) Fire extinguishers and smoke detectors

(b) Exit door alarms and panic bars

(c) Fire house and sprinkler systems

(d) Emergency lighting and fire blankets

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

Answer **all** the questions.

11. (a) Explain the fire triangle.

Or

(b) List the major steps that must be followed in the chemical lab's fire safety.

12. (a) How to select the fire extinguisher and explain the placement of the fire extinguisher?

Or

(b) Explore the importance of Record Maintenance.

13. (a) Write short notes on the Detection zone.

Or

(b) Shortly discuss about the maintenance of the Alarm System.

14. (a) How to install a Hydrant in an underground static water tank?

Or

(b) Explain briefly about pumping arrangements.

15. (a) Shortly, discuss about upper and lower explosive limits.

Or

(b) Explain special hazards.

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

Answer **all** the questions.

16. (a) Briefly discuss the fire extinguisher.

Or

(b) What is AIT? and briefly discuss the classification of fire.

17. (a) Write the need for and importance of Initial inspection and briefly discuss the installation.

Or

(b) Explore refilling with necessary information.

18. (a) Explain in detail about Automatic Fire Detector.

Or

(b) Differentiate UV flame detector and IR detector.

19. (a) Discuss briefly about water supplies and pumping arrangements.

Or

(b) Briefly discuss the following:

(i) Internal fire hydrants and

(ii) External Fire Hydrant.

20. (a) Explain the fire exit and elaborately discus the exit requirements.

Or

(b) Explain in detail about flammable and combustible liquids.

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C–1302	Sub. Code 30712

M.B.A. DEGREE EXAMINATION, NOVEMBER 2023

First Semester

Environment and Industrial Safety

ORGANIZATIONAL BEHAVIOUR

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** the questions.

1. ———— framework is based on the concept of Expectancy, demand, and Intention of the human being.

   (a) Behaviouristic (b) Expectancy

   (c) Cognitive (d) Social learning

2. "Leadership motivates the people to work and not the power of money", this concept is related to ————

   (a) Autocratic model (b) Supportive model

   (c) Custodial model (d) Collegial model

3. Which if the following forms the basis for the autocratic model of OB?

   (a) Dependence on boss

   (b) Power

   (c) Authority

   (d) Obedience

4. The 3 Theoretical Framework of OB are

(a) Cognitive Social and Technical

(b) Cognitive Behaviouristic, Social

(c) Leadership, Attribution, Motivation

(d) Attribution, Perception, and Motivation

5. Every individual sets his goal. and he also knows the ———— which will take him to achieve the goal.

(a) Process (b) Behaviour

(c) Event (d) Way

6. Behavioral framework based on ———— behavior and ———— environmental variables.

(a) Observable – Non Observable

(b) Observable – Observable

(c) Non Observable – Observable

(d) Non Observable – Non Observable

7. The individuality, humanness, and mental health of the person will improve ———— the level of need he satisfied.

(a) Less than (b) Greater than

(c) At Per with (d) None of the above

8. "The combination of characteristics or qualities that form an individual's distinctive character" is the definition of ————

(a) Personality (b) Motivation

(c) Attitude (d) Behvaiour

9. Every Individual is ———— by their personality.

(a) Intellectual (b) Specific

(c) Unique (d) Systematic

10. Groups created by managerial decisions to accomplish the organization's stated goals are called

(a) format groups (b) informal groups

(c) task groups (d) interest groups

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

Answer **all** the questions.

11. (a) Explain in detail about management approaches.

Or

(b) List the roles and responsibilities of a formal organization.

12. (a) Briefly discuss leadership characteristics.

Or

(b) Criticize the social responsibilities of Management.

13. (a) What is controlling? Discuss the functions of the controller.

Or

(b) Writ short notes on effective control systems.

14. (a) Mention the importance of organizational behavior and discuss the concept.

Or

(b) Explain the stages of conflict.

15. (a) Briefly discuss the sources of stress.

Or

(b) Write short notes on Motivation across cultures.

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

Answer **all** the questions.

16. (a) Briefly discuss the management theories.

Or

(b) Elaborately discuss the principles Management and write their merits and demerits.

17. (a) What is the span of Management? And discuss briefly about manpower planning.

Or

(b) List and explain ten commandments of corporate social responsibilities.

18. (a) Identify the control techniques and explain them.

Or

(b) Who are all global managers, and briefly discuss the role of global manager?

19. (a) Classify the group and discuss in detail about group development.

Or

(b) Explain in detail about managing conflict.

20. (a) Briefly discuss international organizational behavior.

Or

(b) Elaborately discuss culture stock and Motivation.

———————

C–1303	Sub. Code
	30713

M.B.A. DEGREE EXAMINATION, NOVEMBER 2023

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. Probability of the event that might occur X severity of the event if it occurs

   (a) Risk (b) Hazard

   (c) Accident (d) None of these

2. Industrial safety management is the branch of management concerned with ———— hazards from the industries.

   (a) Reducing (b) Controlling

   (c) Eliminating (d) All of these

3. Which of the following is/are used for safety and/or health signs?

   (a) Signboard (b) a colour

   (c) acoustic signal (d) All of these

4. Which colour is used to indicate the Emergency escape and First Aid sign?

   (a) Red (b) Blue

   (c) Green (d) Black

5. Who may be responsible for the accident?

(a) Worker (b) Working conditions

(c) Management (d) All of the above

6. What is the purpose of a fire sprinkler head's thermal element?

(a) To control water flow

(b) To activate the alarm

(c) To release the fire suppressant

(d) To detect heat and trigger the sprinkler

7. Which type of fire sprinkler head has a glass bulb that shatters when exposed to heat, allowing water to flow?

(a) Pendant head (b) Upright head

(c) Concealed head (d) Quick response head

8. What's the main difference between Class A and B fire alarm wiring?

(a) Class A allows communication devices beyond wire breaks ; Class B doesn't

(b) Class A uses thicker wires than Class B

(c) Class A is cost-effective; Class B isn't

(d) Class B is preferred for outdoor use

9. At what flashpoint temperature, in degrees Celsius, are liquids classified as "Combustible"?

(a) –18°C (b) 0°C

(c) 38°C (d) 50°C

10. Why might respirations be necessary in a hazardous workplace?

(a) To enhance communication among workers

(b) To keep workers comfortable during their shifts

(c) To protect workers from inhaling harmful airborne contaminants

(d) To improve worker visibility in low-light conditions

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) List the heat transfer methods and discuss them briefly.

Or

(b) Define risk and discuss how to handle risk in industries.

12. (a) Explain in detail about parts of the safety helmet.

Or

(b) Briefly discuss fire extinguisher operating methods.

13. (a) Describe the importance of leg protection and its measures.

Or

(b) Elaborately discuss about water flow alarm.

14. (a) Explain the need and significance of heat detectors.

Or

(b) Discuss the skin protection methods with relevant information.

15. (a) Describe shortly about oxygen deficiency.

Or

(b) Explain the air purifying respirator and its uses.

Part C (5 × 8 = 40)

Answer **all** questions.

16. (a) Define Fire Point and describe BLEVE in a detailed manner.

Or

(b) Elaborately discuss PPE and its types.

17. (a) Briefly discuss about FOAM and DCP.

Or

(b) Describe in detail the industry's potential eye hazards and prevention methods.

18. (a) Explain the types of hand protection and care of hand protection.

Or

(b) What is sprinkler head, and discuss briefly about it.

19. (a) Briefly discuss the power supplies for the alarm system.

Or

(b) Explore physical hazards with necessary information.

20. (a) What is self contained breathing apparatus? Discuss briefly about it.

Or

(b) Elaborately discuss flammable and combustible liquid.

C–1304	Sub. Code
	30714

M.B.A. DEGREE EXAMINATION, NOVEMBER 2023

First Semester

Environment and Industrial Safety

SAFETY MANAGEMENT IN CONSTRUCTION SECTOR

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** the questions.

1. What does WHS stand for in the context of workplace health and safety?

   (a) Workplace Health solution

   (b) Worker Health standards

   (c) Workplace health and safety

   (d) Work ours and Safety

2. Which of the following materials are typically associated with Class A fires in workplace safety?

   (a) Liquids and gases

   (b) Electrical Failures

   (c) Solid materials like wood and paper

   (d) Metallic substances

3. What is the first step in managing workplace health and safety?

(a) Implementing PPE

(b) Conducting regular maintenance of equipment

(c) Risk assessment and planning

(d) Supervising workers closely

4. What type of safety gear is essential for road construction workers to enhance visibility?

(a) High-visibility vests

(b) Safety gloves

(c) Sunglasses

(d) Winter coats

5. Why are road signs aid signals crucial in road construction areas?

(a) To distract drivers and slow down traffic

(b) To increase noise levels for safety

(c) To create a festive atmosphere

(d) To guide and inform drivers about hazards

6. How should safety nets be installed in relation to the working surface, according to safety guidelines?

(a) At least 50 feet below the working level

(b) As far away from the working surface as possible

(c) As close as practicable under the working surface

(d) At the same level as the working surface

7. What type of snaphooks must be used in a personal fall arrest system to prevent disengagement?

(a) Looking snaphooks

(b) Non-locking snaphooks

(c) Self-retracing snaphooks

(d) Elastic snaphooks

8. What is a significant hazard associated with heavy equipment due to large moving parts?

(a) Electrical shock hazard

(b) Fire hazard

(c) Crush hazard

(d) Slip ard trip hazard

9. What is a recommenced measure to reduce the risk of accidents due to limited visibility from rhe operator's cabin in heavy equipment?

(a) Reduce the size of the equipment

(b) Use additional lighting inside the cabin

(c) Install mirrors and safety devices

(d) Increase the speed of the equipment

10. What is the most common method of commercial demolition that involves the use of explosives?

(a) Wrecking ball demolition

(b) Explosive demolition

(c) Hand demolition

(d) Machine demolition

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Describe the human factors associated with construction industry accidents.

Or

(b) What are all the important things that must be followed in construction regulations?

12. (a) Explain the basement and wide excavation.

Or

(b) Briefly discuss work over water with necessary data.

13. (a) Explain the requirements of safe work platforms.

Or

(b) Work permit systems - Explain.

14. (a) Explain the operation of mobile cranes and tower cranes.

Or

(b) Explain the uses of portable electrical tools.

15. (a) Briefly discuss the essential keys to safety demolition.

Or

(b) Write the importance of First aid and discuss it briefly.

Part C

$(5 \times 8 = 40)$

Answer **all** the questions.

16. (a) Briefly discuss the construction industry safety.

Or

(b) Explore the need and significance of education and training.

17. (a) Explain the following.

(i) Tunneling

(ii) False work.

Or

(b) List the road work hazards and their prevention methods.

18. (a) What is OSHA 3146? And briefly discuss the need for and importance of it.

Or

(b) Explore the following :

(i) safety bells and

(ii) safety nets.

19. (a) Elaborately discuss the concrete pimps and dumpers.

Or

(b) Describe in detail about the manual handling scaffolding.

20. (a) Using explosives, how to do the safe demolition — Explain with relevant information.

Or

(b) Explore the interesting experience at the construction site against fire accidents with a one example.

———————

C–1305	Sub. Code
	30715

M.B.A. DEGREE EXAMINATION, NOVEMBER 2023.

First Semester

Environment & Industrial Safety

ENVIRONMENTAL STUDIES

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 =10)

Answer **all** the questions.

1. The natural place of an organism or community is known as

   (a) Niche (b) Bionic

   (c) Habitat (d) Habit

2. What is the animal symbol of W.W.F. (World Wildlife Fund)?

   (a) Giant Panda (b) Tiger

   (c) Cheetah (d) Lion

3. The component of the biosphere related to soil is

   (a) Lithosphere (b) Hydrosphere

   (c) Atmosphere (d) None of the above

4. Which of the following is a nonrenewable energy resource?

   (a) solar (b) methane

   (c) coal (d) hydroelectric

5. The species which are in danger of extinction are called:
   (a) Endangered species
   (b) Normal species
   (c) Vulnearable species
   (d) Rare species

6. Deserts, grasslands, forests, and tundra regions are the examples of
   (a) Biomes (b) Biogeographically regions
   (c) Ecosystems (d) Biospheres

7. Soil erosion can be prevented by
   (a) Afforestation
   (b) Overgazing
   (c) increase birds population
   (d) removal of vegetation

8. The true statement about the 'greenhouse effect' is that it is
   (a) caused by the combination of many gases
   (b) caused by CO2
   (c) caused only by CO2, CFC, CH4 and NO2 gases
   (d) None of these

9. Drinking fluoride containing water results:
   (a) fluorosis (b) chlorosis
   (c) minemata (d) methaemoglobinema

10. The effects of radioactive pollutants depend upon
   (a) Rate of diffusion
   (b) energy relating capacity
   (c) rate of deposition of the contaminant
   (d) all of these

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Explain the scope of environmental studies.

Or

(b) Explain in detail about the need for environmental studies.

12. (a) Briefly discuss deforestation.

Or

(b) Explore the effect of modern agriculture on food resources.

13. (a) Classify bio geographical in India End explore it with relevant information.

Or

(b) Write short note on food chains and discuss the necessity and importance of it.

14. (a) What are all the actions immediately to implement to reduce marine pollution?

Or

(b) Explain in Thermal pollution and its control measures.

15. (a) Write your suggestions to reduce the pollution in the mountains.

Or

(b) Explore your field experience in industrial pollution.

Part C

($5 \times 8 = 40$)

Answer **all** the questions.

16. (a) Describe the importance of the multi disciplinary nature of environmental studies.

Or

(b) Briefly discuss the importance of multidisciplinary environmental studies.

17. (a) Explain — World food problems and suggest a suitable remedy for it.

Or

(b) What is land degradation, and discuss role of individuals in the conservation of natural resources.

18. (a) Explore ecological pyramids with relevant data.

Or

(b) Explain In-situ and Ex-Situ conservation of Biodiversity.

19. (a) Explore the causes of soil pollution and briefly discuss the effects of it.

Or

(b) Describe the major causes of nuclear hazards and control measures.

20. (a) Explain your field experience in the study of common birds.

Or

(b) Briefly discuss bout simple ecosystem with your field experience.

———————

C–1306	Sub. Code 30716(A)

M.B.A. DEGREE EXAMINATION, NOVEMBER 2023.

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** the questions.

1. What is the primary goal of industrial safety?
   (a) Increasing production efficiency
   (b) Reducing workman's compensation costs
   (c) Enhancing the environmental impact of the manufacturing unit
   (d) Maximizing work stoppage
2. Thermal relief devices are most essential in pressure systems that transport which of the following substances?
   (a) Incompressible fluids
   (b) Gases
   (c) Solids
   (d) Liquids
3. Environmental causes of accidents may include all of the following except
   (a) Congestion
   (b) Poor housekeeping
   (c) Inadequate illumination
   (d) Proper ventilation

4. What are common sources of accidents in an industrial setting?

(a) Proper lighting and ventilation

(b) Revolving and rotating machine parts

(c) Adequate cleanliness

(d) Well-maintained electrical systems

5. What is the primary purpose of a distillation column in a process plant?

(a) Heat generation

(b) Filtration of impurities

(c) Separation of liquid mixtures

(d) Pressure control

6. In the context of process control, what does the term "PID" stand for?

(a) Process Indicator Device

(b) Pressure and Impact Detector

(c) Proportional Integral Derivative

(d) Pipeline Inspection Document

7. Near accidents, with no damage or injury, are also known as:

(a) Serious accidents (b) Trivial accidents

(c) Fatal accidents (d) Minor accidents

8. Which safety equipment should be readily available in toxic storage areas for handling emergencies?

(a) Earplugs (b) Fire extinguishers

(c) Safety shoes (d) Hard hats

9. How often should inspections of toxic storage areas be conducted to ensure safe practices are maintained?

(a) Annually (b) Monthly

(c) Daily (d) Weekly

10. What is the factor in determining the set pressure of a thermal relief valve?

(a) Pipe length

(b) Pipe diameter

(c) Design temperature range

(d) Fluid viscosity

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

Answer **all** the questions.

11. (a) Distinguish conceptual design and detail design.

Or

(b) Explore the important standards and codes for the safely design of fire relief.

12. (a) Define commissioning and discuss processing commissioning.

Or

(b) Name the non-destructive testing methods and discuss any one with a neat sketch.

13. (a) Briefly discuss the permit system in plant operations.

Or

(b) Describe in detail about colour coding of pipes and their uses.

14. (a) Explain the management of maintenance.

Or

(b) Elaborately discuss the maintenance equipment.

15. (a) What are all the safety measures that need to be followed in petroleum product storage?

Or

(b) Explore the prevention and protection methods of underground storage.

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

Answer **all** the questions.

16. (a) Briefly discuss the pressure relief devices and their design procedure.

Or

(b) Describe reactor safety with necessary information.

17. (a) Explain in detail about the commissioning phases with necessary data.

Or

(b) Explore the need and necessity of performance monitoring and discuss its importance.

18. (a) Explain in detail about refinery units.

Or

(b) Define Corrosion and explain the prevention of corrosion for underground pipes.

19. (a) Briefly discuss the following:

(i) Disaster planning and

(ii) Emergency planning.

Or

(b) Explain in detail about onsite emergencies in the process industry.

20. (a) Storage tanks and their safety – discuss briefly.

Or

(b) Elaborately discuss the toxic storages and chlorine storages.

———————

C–1307	Sub. Code 30716 (B)

M.B.A. DEGREE EXAMINATION, NOVEMBER 2023.

First Semester

Environment and Industrial Safety

WORK STUDY AND ERGONOMICS

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** the questions.

1. The working area should be illuminated ———— their surroundings.

   (a) More than

   (b) Less than

   (c) Equal to

   (d) Depends upon the type of job performed

2. The safe exposure limits for noise levels for 08 hours of working/day is ———— dBA.

   (a) 90 (b) 100

   (c) 110 (d) 150

3. The state of the worker by which the capacity and willingness to do work are reduced is called.

(a) Stress (b) Fatigue

(c) Creep (d) None of the above

4. Which of the following is a scale plan?

(a) String diagram

(b) Flow process chart

(c) Operation process chart

(d) All of the above

5. The poeple can carry out continuous tasks without fatigue if the energy requirement for the task is less than ———— watt.

(a) 250 (b) 500

(c) 750 (d) 1000

6. For longer seating, the most comfortable position for the leg is when the knee is bent at about a degree.

(a) 55 (b) 65

(c) 45 (d) 60

7. Which of the following is required for work-study?

(a) Stopwatch

(b) Flow process chart

(c) Outline process chart

(d) Motion chart

8. The total time taken by a worker to perform an operation considering allowances is called as

(a) Normal time

(b) Standard time

(c) Representative time

(d) Observed time

9. In ergonomics, what is the primary focus of the man-machine system?

(a) Machines and equipment design

(b) Human factors and interactions

(c) Environmental sustainability

(d) Regulatory compliance

10. In ergonomics, what is the primary goal of conducting usability testing on a product or system within the man-machine system?

(a) To reduce worker motivation

(b) To increase product cost

(c) To identify and address usability issues from a user's perspective

(d) To streamline the regulatory approval process

Section B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Explain the basic stages of work study.

Or

(b) Write short notes on the work procedure.

12. (a) What is physical strain? Briefly discuss the causes and remedies.

Or

(b) Define Ergonomics and briefly discuss the principles of motion economy.

13. (a) Name the type of PPE and discuss anyone with the necessary data.

Or

(b) Briefly, the important steps in procurement storage of PPE.

14. (a) Explain in detail about built safety.

Or

(b) Explore the prevention methods.

15. (a) Criticize the personal risk factors it man machine system.

Or

(b) Explain in detail about measurement characteristics.

Section C (5 × 8 = 40)

Answer **all** the questions.

16. (a) Describe in detail about the human factors which will affect the work study.

Or

(b) Briefly discuss the methods and movements at the workplace.

17. (a) State the principle of ergonomics and briefly discuss the work platforms.

Or

(b) Identify the worker's physiology and briefly discuss the physiology treatment methods with relevant data.

18. (a) Explore the need and importance of PPE.

Or

(b) Analyze the ergonomic considerations in designing the PPE.

19. (a) What are concept modules, and briefly discuss them?

Or

(b) Explore in detail about safety devices and their needs.

20. (a) Briefly discuss the methods of reducing posture strain.

Or

(b) Explore the strategies for enhanced performance in man machine system.

———————