C–1698	Sub. Code
	91023

B.Sc. DEGREE EXAMINATION, APRIL 2024

Second Semester

Fire 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 is cryogenic liquid?
2. Give any three prevention method for common injuries.
3. What is ergonomics?
4. Give any two reasons for crane accident.
5. List out the types of derricks.
6. What is the use of hoist limit switch?
7. Define Rigging.
8. Differentiate Wire rope and Fiber rope.
9. What is Escalator?
10. What is a shackle?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain about hand trolley and hand truck.

Or

(b) Explain briefly about ergonomic and prevention method for manual handling hazards.

12. (a) Write the Job Hazard Analysis for the Crane operations.

Or

(b) Write about the reasons for Crane accident and preventive measures.

13. (a) Describe the hazard and safety precaution in Conveyors.

Or

(b) Explain about the safe operative method of derricks near power line.

14. (a) Explain about strength of wire rope and fatigue of wire rope.

Or

(b) Explain in detail about PPE and its types.

15. (a) How do you conduct performance test for powered Industrial trucks?

Or

(b) List out the safety device and brakes in elevator, truck and hoist.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain in detail about safe use of accessories for manual handling.

Or

(b) Explain the types of Crane: Provide the reasons for Crane Accidents.

17. (a) Explain in detail about hazardous material storage and necessary PPE's for handling.

Or

(b) Explain briefly about fork lift safe operations and testing procedures.

18. (a) Explain in detail about the operating principles of industrial trucks.

Or

(b) Explain in detail about escalators and its types.

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C–1699	Sub. Code
	91024

B.Sc. DEGREE EXAMINATION, APRIL 2024

Second Semester

Fire and Industrial Safety

CHEMICAL SAFETY

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. What are the Routes of Entry of Chemicals?
2. What are the physical form of chemicals?
3. What is Inventory?
4. What is hierarchy of control?
5. Define Cryogen.
6. Give examples of oxidizing substances.
7. Write about process safety hazards.
8. Give the objectives of emergency planning.
9. Define Autoclaving.
10. What is Acute and Chronic Conditions?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write the contents of MSDS.

Or

(b) Draw the CLP hazard pictogram.

12. (a) Give the classification of hazardous chemicals.

Or

(b) Write the importance of Emergency Information Panel.

13. (a) Explain about the general guidelines for safe storage and handling.

Or

(b) Explain about the storage and handling procedures for corrosive substances.

14. (a) Write about Mechanical Integrity.

Or

(b) Explain about PFIA.

15. (a) Write about Safety precautions for chemical laboratories.

Or

(b) What are the types of incidents?

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Differentiate the Internal audit and External audit with advantages and disadvantages.

Or

(b) Explain the contents of incident investigation report.

17. (a) Write about chemical storage tank design considerations.

Or

(b) Explain the Hierarchy of control.

18. (a) Write a short note on Radioactive Hazards.

Or

(b) Explain about GHS.

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C–1700	Sub. Code
	91025

B.Sc. DEGREE EXAMINATION, APRIL 2024

Second Semester

Fire and Industrial Safety

INDUSTRIAL HYGIENE

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is the Nervous system?

2. Define basic unit of life.

3. What is Ionizing Radiation?

4. Define Zoonosis

5. What are the physical forms of chemicals?

6. Define Noise.

7. Define Ergonomics.

8. What are the hazards of manual handling?

9. What is tendinitis?

10. What is air sampling?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain the different types of joints.

Or

(b) Write about Central Nervous System and Peripheral Nervous System.

12. (a) Explain about Hepatitis B and C.

Or

(b) Explain the Hand arm vibration and whole body vibration.

13. (a) Explain in detail about TWA.

Or

(b) Explain about Nephrotoxic Agents.

14. (a) Explain the factors affecting performance of physical task.

Or

(b) Explain the causes of Tendinitis.

15. (a) How X ray test will be taken?

Or

(b) Write about sampling of gases and vapour.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain the functions of Circulatory system.

Or

(b) Write about Local Exhaust Ventilation.

17. (a) Explain about PPE and its types.

Or

(b) Explain in detail about blood borne disease.

18. (a) Explain about sampling and analytical methods.

Or

(b) Write about Display Screen Equipment.

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C–1701	Sub. Code 91026

B.Sc. DEGREE EXAMINATION, APRIL 2024

Second Semester

Fire and Industrial Safety

PRINCIPLES OF SAFETY MANAGEMENT

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is safety sampling?

2. What is safety policy?

3. What is non conformity reporting?

4. Differentiate safety audit and inspection.

5. What is reportable accident?

6. What is incident?

7. What is safety T score?

8. What is severity rate?

9. What is safety campaign?

10. Give the uses of safety poster.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write about safety survey.

Or

(b) Explain job safety analysis.

12. (a) Write about types of audit.

Or

(b) How to identify unsafe acts and unsafe condition?

13. (a) Explain the cost of accident.

Or

(b) How to document the accident?

14. (a) Explain permanent partial disability with example.

Or

(b) Write about frequency severity incident.

15. (a) Explain safety pledge.

Or

(b) Write the methods for promoting safety.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) How to identify the safety training needs?

Or

(b) Explain the role of safety committee.

17. (a) Explain the principle of accident prevention.

Or

(b) Write about departmental accident reports.

18. (a) How to evaluate the safety performance of a company?

Or

(b) Explain incident recall techniques.

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C–1702	Sub. Code
	91032

B.Sc. DEGREE EXAMINATION, APRIL 2024

Third Semester

Fire and Industrial Safety

INDUSTRIAL SAFETY AND LEAN CONCEPTS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. Define the concept of industrial safety.

2. Shortly discuss about working hours.

3. How to store the chemical safely?

4. What is the site layout?

5. Define vibration.

6. Mention the acceptable noise level in the working environment.

7. List the uses of cranes.

8. Define welding.

9. State the role of leadership.

10. Write short notes on quality circles.

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

Answer **all** questions.

11. (a) Explore the training methods for the workers.

Or

(b) How to do the industrial Audit? Discuss briefly.

12. (a) Explain the design of buildings with safety.

Or

(b) How to perform the hazard analysis? Express with necessary information.

13. (a) Shortly discuss about fatigue.

Or

(b) Briefly discuss about lighting and vision in the working environment.

14. (a) Explain the process of grinding with a neat sketch.

Or

(b) Explain in detail about machine tool hazards and their control methods.

15. (a) Briefly discuss about POKA YOKE.

Or

(b) Explain in detail about the 5 why's Techniques.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Define security. And discuss briefly about worker's safety.

Or

(b) What is condition monitoring? Explain the condition monitoring in industrial safety.

17. (a) Briefly discuss safety equipment and its significance.

Or

(b) Explain the following :

(i) hand tools and

(ii) portable power tools.

18. (a) Narrate the significance of ISHIKAWA diagrams.

Or

(b) Explain in detail about the need and importance of industrial safety.

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C–1703	Sub. Code 91035

B.Sc. DEGREE EXAMINATION, APRIL 2024

Third Semester

Fire and Industrial Safety

INCIDENT PREVENTION, CONTROL, INVESTIGATION AND REPORTING

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** the questions.

1. What are nonreportable accidents?

2. Why do we need to report accidents to the government sector?

3. Define human factors theory.

4. What is Bird's Triangle?

5. How to control accidents?

6. List the prevention methods of accidents.

7. What is an accident investigation?

8. Write the importance of Root cause analysis.

9. Define Accident.

10. What are incidence rates?

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) What is BOCW Act 1996 form No.14? Explain with the necessary information.

Or

(b) Discuss about the significance of the accident reporting system.

12. (a) Brief out about epidemiological theory.

Or

(b) Explain in detail about the pure chance theory.

13. (a) Write short notes on elimination.

Or

(b) Express in detail about the need and role of administrative control.

14. (a) State and explain SCAT.

Or

(b) Briefly discuss about the process of accident investigation.

15. (a) Briefly discuss about scheduled charges for disabilities.

Or

(b) Differentiate disabling Injury and Non Disabling Injury.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain in detail about the Factories Act 1948 – form No.18.

Or

(b) Define Domino Theory. Explain in detail about Heinrich Domino Theory.

17. (a) The hierarchy of accident prevention and control methods – Discuss briefly.

Or

(b) Briefly discuss about Fault Tress Analysis and Event Tree Analysis.

18. (a) Explain the following :

(i) Partial Disablement

(ii) Total Disablement.

Or

(b) Discuss the industry accident prevention and control methods.

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C–1704	Sub. Code 91042

B.Sc. DEGREE EXAMINATION, APRIL 2024.

Fourth Semester

Fire and Industrial Safety

FIRE DESIGN ENGINEERING

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define fire.

2. What is Flash point?

3. What is fire extinguishers?

4. Define fire load.

5. List out types of detecting devices in fire alarm systems.

6. Explain about Fire Ball.

7. Define fire hydrant monitor system.

8. What is Pool Fire?

9. Classify the types of exits.

10. Explain about Manual call point.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain about Fire Fighting Techniques.

Or

(b) What is fire triangle, tetrahedron and pentagon?

12. (a) How to install fire extinguisher and it procedure for fixing?

Or

(b) Discuss about the maintenance checklist required for checking fire extinguisher.

13. (a) Write about Active Fire Protection system.

Or

(b) Explain about installation of fire pump room.

14. (a) Explain about the Classes of Fire and the Types of Fire Extinguisher?

Or

(b) Why does a foam fire suppression system work?

15. (a) How does fire alarm control panel work?

Or

(b) Can smoke alarms be fitted on walls? Can smoke alarms be interconnected wirelessly?

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Write a short note on Fire Hydrant System.

Or

(b) Explain the installation of foam flooding.

17. (a) Write about Smoke, Heat and Flame Detector.

Or

(b) Explain about NBC classification based on occupancy.

18. (a) Write a short note on installation of MCP.

Or

(b) Write about coding writing in fire panel.

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C–1705	Sub. Code 91043

B.Sc. DEGREE EXAMINATION, APRIL 2024.

Fourth Semester

Fire and Industrial Safety

PROCESS SAFETY MANAGEMENT

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is process safety?

2. What is LEL and UEL?

3. Write the limitation of PHA.

4. Who needs safety training?

5. What is quality assurances?

6. What is safety audit?

7. Give the purpose of incident investigation.

8. What is trade secretes?

9. What are the example of hard work?

10. Who is client who is contractors?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain block flow diagram.

Or

(b) Write about process chemistry.

12. (a) Explain checklist analysis.

Or

(b) Write the advantage of HAZOP.

13. (a) Write about compliance audit.

Or

(b) Explain mechanical integrity.

14. (a) Write about employee participation.

Or

(b) Give the content of incident investigation report.

15. (a) How to select the contractors?

Or

(b) Explain emergency planning and response.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Write about electrical classification.

Or

(b) Explain FMEA.

17. (a) Write about what is analysis.

Or

(b) Explain incident investigation methodology.

18. (a) Explain hot work hazards.

Or

(b) Explain the types of safety training.

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C–1706	Sub. Code 91044

B.Sc. DEGREE EXAMINATION, APRIL 2024.

Fourth Semester

Fire and Industrial Safety

HAZARD IDENTIFICATION, RISK ASSESSMENT AND RISK CONROL

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is Risk matrix?

2. What is safety instrumentation?

3. Write about various PHA methods.

4. Define Qualitative Risk Analysis.

5. What is risk?

6. What is Risk Priority Number?

7. Define Computer HAZOP.

8. What is risk assessment?

9. Define Safety Life Cycle.

10. What SIL?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write about safety instrumentation.

Or

(b) Write about Functional Safety.

12. (a) Explain about Risk assessment and management.

Or

(b) Write about various methods of PHA.

13. (a) Write about layer of protection analysis.

Or

(b) Write about check list analysis.

14. (a) Write about Electrical Area Classification.

Or

(b) Explain about HAZOP Methodology.

15. (a) Write about Electrical Area Classification.

Or

(b) Explain about safety life cycle and operation maintenance.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Write about Quantitative Risk Analysis.

Or

(b) Explain about plant hazard preliminaries.

17. (a) Write about evaluation of plant hazard selection techniques.

Or

(b) Give the comparison of various PHA methods.

18. (a) Write about SIL certification and standards.

Or

(b) Explain about third party certification of instruments.

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C–1707	Sub. Code 91045

B.Sc. DEGREE EXAMINATION, APRIL 2024.

Fourth Semester

Fire and Industrial Safety

SAFETY INSPECTION AND AUDIT

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What are the criteria for selecting the inspection team?

2. What are the hazards in work place?

3. What is safety audit?

4. What is NCR?

5. Define EIA in EMS.

6. What is environmental policy?

7. Define Auditee.

8. What is the role and responsibilities of auditing?

9. Define safety policy.

10. What is short term action plan?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain the purpose of inspection.

Or

(b) Explain about:

(i) Duration of safety inspection

(ii) Frequency of safety inspection

12. (a) Explain in detail about post audit activities.

Or

(b) Explain the objective of audit.

13. (a) Explain in detail about steps in ISO 14001 audit.

Or

(b) Explain about ISO 14040 (LCA).

14. (a) Explain the types of records to be examined during safety audit.

Or

(b) Explain about opening meeting and closing meeting in audit.

15. (a) Write about OH&S policy, key elements in OH&S policy.

Or

(b) Comparison of ISO 45001 and OHSAS 18001.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain the methodology to conduct safety audit.

Or

(b) Explain about safety inspection, purpose, duration, frequency, follow up and monitoring.

17. (a) Explain the elements of OS and HS.

Or

(b) Explain in detail about EIA in EMS.

18. (a) Explain in detail about Eco-labelling.

Or

(b) Discuss in details about Correspondence between OHSAS 18001, ISO 14001 and ISO 9001.

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C–1708	Sub. Code 91051

B.Sc. DEGREE EXAMINATION, APRIL 2024.

Fifth Semester

Fire and Industrial Safety

SAFETY IN HIGH HAZARDOUS AREAS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is meant by explosion-proof equipment?

2. Write a note on non-sparking equipment.

3. Define NFA.

4. Shortly discuss about fibers.

5. Identify the uses of Nitrogen filled equipment.

6. What is SF_6?

7. Explain Intrinsic safety.

8. Define potting.

9. Describe shortly about electrical sparks.

10. List the advantages of intrinsic safety.

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

Answer **all** questions.

11. (a) Write a note on Hazardous Industrial Zones.

Or

(b) Briefly discuss about design features of increased safety equipment.

12. (a) Describe – Electro-technical Committee Hazardous Area Classification.

Or

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

13. (a) Elaborately discuss about oil-immersed equipment.

Or

(b) Discuss briefly about permissible hot spot temperature.

14. (a) Explore the protection methods of Fiber Optics in hazardous areas.

Or

(b) Briefly discuss about cable seals and their protection methods.

15. (a) Describe Hazardous locations in a detailed manner.

Or

(b) List the applications of passive and isolated barriers.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Elaborately discuss about the classification of industrial equipment enclosures for various hazardous gases.

Or

(b) Explain in detail about the Expert systems for maintenance.

17. (a) Briefly discuss about faults in electrical equipment and its safety hazards.

Or

(b) Enumerate different types of protection methods in Hazardous areas.

18. (a) Explain about different intrinsic safety in hazardous locations.

Or

(b) What do you mean by hazardous industrial zone class 0, 1 and 2? Discuss briefly.

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C–1709	Sub. Code
	91052

B.Sc. DEGREE EXAMINATION, APRIL 2024.

Fifth Semester

Fire & Industrial Safety

SAFETY IN OIL AND GAS INDUSTRIES

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define product hazards.

2. Classify human error.

3. Write a few unsafe acts in oil and gas industries.

4. Define fault tree analysis.

5. What is called risk picture?

6. List the major causes of the offshore accident.

7. Compare group and individual factors.

8. Write the recommendation to reduce fatal accidents.

9. What is called an early warning?

10. Mention the accident data collection sources.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write about the principles of safety management.

Or

(b) Describe the reasons for human error occurrence.

12. (a) List out the merits and demerits of the PHA.

Or

(b) Give a short note on interface safety analysis.

13. (a) Explain the concepts of onshore worker situation awareness.

Or

(b) Discuss the causes of the ocean ranger accident.

14. (a) Brief the organizational factors contributing to accident in oil and gas industry.

Or

(b) Write the recommendation to reduce fatal accidents in the oil and gas industry.

15. (a) Write short notes on offshore emergency planning.

Or

(b) Discuss the duties of the worldwide offshore accident databank.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Discuss the common causes of injuries and its protection method.

Or

(b) Explain the methods for conducting FMEA in detail.

17. (a) Describe the Bohai 2 oil accident and the lessons learned from it.

Or

(b) Discuss the steps to conduct safety awareness programs in oil and gas industry.

18. (a) Describe the functions of the international association of oil and gas producers.

Or

(b) Discuss offshore oil and gas industry accident data analysis in detail.

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C–1710	Sub. Code
	91053

B.Sc. DEGREE EXAMINATION, APRIL 2024

Fifth Semester

Fire and Industrial Safety

SAFETY ASPECTS IN INDUSTRIAL PLANT LAYOUT DESIGN

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is a safe distance?
2. List the benefits of fire hydrants.
3. How to select the location for waste treatment?
4. Define LPG.
5. Mention the advantages and disadvantages of a computerized layout.
6. Write short notes on SCM.
7. Identify the purpose of lighting.
8. What is good illumination?
9. Shortly discuss rope fitting.
10. What is overloading?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Define the safety system and explain with the necessary information.

Or

(b) State the role of security towers and discuss shortly about approach roads.

12. (a) Define LNG and CNG and differentiate it.

Or

(b) Express the significance and limitations of the die penetration test.

13. (a) Briefly discuss about JIT.

Or

(b) Explain in detail about warehouse operations.

14. (a) Write the principles of good ventilation and differentiate good and bad ventilation.

Or

(b) Importance and need of employee assignment-discuss shortly.

15. (a) Describe the ways to prevent common injuries.

Or

(b) Briefly discuss about installation and maintenance of Conveying equipment.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Briefly discuss about Nuclear Power Stations.

Or

(b) Explain the following:

(i) Explosives

(ii) Propellants.

17. (a) State and express the significance of quantitative models and layout models.

Or

(b) Explore the benefits of good housekeeping and shortly discuss its importance and need.

18. (a) Explore and discuss the essential general safety consideration in material handling.

Or

(b) Describe and explain in detail about industrial plant layout design and industrial operations.

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C–1711	Sub. Code
	91054

B.Sc. DEGREE EXAMINATION, APRIL 2024

Fifth Semester

Fire and Industrial Safety

SAFETY IN LOGISTICS AND WAREHOUSE SAFETY

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Write the objectives of logistics.
2. Define WMS.
3. What do you mean by 'rest pause'?
4. List any four transport rules.
5. Write the purpose of worker training.
6. Brief forklift inspection method.
7. What is factor of safety?
8. Point out the wire rope safety precautions.
9. Define toxicity index.
10. Write few responsibilities of fire officer.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write short notes on Warehousing cost.

Or

(b) Write about the logistics system designs.

12. (a) Discuss the significance of driver safety program.

Or

(b) Write short notes on road transport act.

13. (a) Discuss safe mechanical material handling procedures.

Or

(b) Write the importance of crane safety.

14. (a) Explain the safe handling of compressed gas cylinders.

Or

(b) Discuss the safe usage of chains and wire rope slings.

15. (a) Write short notes on the fire hydrant system.

Or

(b) List the roles and responsibilities of the fire service department.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Discuss the evolution of warehousing in detail.

Or

(b) Discuss the inspection and maintenance of off-road vehicles in detail.

17. (a) Enumerate the inspection procedure for the forklift.

Or

(b) Enumerate the goliath crane working and its safety precautions.

18. (a) Sketch and explain a suitable fire protection system for a shopping mall.

Or

(b) Discuss the types of fire extinguishers and its applications in detail.

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C–1713	Sub. Code
	91061

B.Sc. DEGREE EXAMINATION, APRIL 2024.

Sixth Semester

Fire and Industrial Safety

SAFETY MANAGEMENT SYSTEM

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is Holistic safety?
2. Define cost of accident.
3. Define safety policy.
4. What is Haddon matrix theory?
5. What is tool box talk?
6. What is safety induction?
7. What is KAIZEN concepts?
8. What is a safety incentive scheme?
9. What is safety Culture?
10. What is the meaning of individual differences?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain in detail about Budgeting for safety.

Or

(b) Write about the need for safety in the workplace.

12. (a) Explain the four keys to effective safety communication.

Or

(b) Discuss in detail about safety policy.

13. (a) Explain in details about the training for contractors and visitors in safety.

Or

(b) List out some effective safety induction tips.

14. (a) List out some importance of employee participation in safety.

Or

(b) Explain about the five ways to promote safety practices in the workplace.

15. (a) Explain in detail about Ethical Issues in safety.

Or

(b) Explain in detail about Psychological aspects of safety.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain in details about authority power and qualification of safety officer.

Or

(b) Explain in details about management information system.

17. (a) Explain in detail about the power of safety department in industries.

Or

(b) Explain in detail about the modern methods of safety training.

18. (a) Discuss in details about history of trade union in India.

Or

(b) Explain in detail about the organizational behavior in safety.

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C–1714	Sub. Code
	91062

B.Sc. DEGREE EXAMINATION, APRIL 2024

Sixth Semester

Fire and Industrial Safety

COMPUTER AIDED HAZARD ANALYSIS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define hazards.
2. What is societal risk?
3. Define safety audit.
4. What is Impact sensitiveness test?
5. What is pool fire?
6. What is chemical inventory analysis?
7. Define flash point.
8. What is HAZAN?
9. Mention the reason for Bhopal disaster.
10. What is explosion?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain in detail about Human Error analysis.

Or

(b) Write about hazards assessment, procedure and methodology.

12. (a) Explain about Thermo Gravimetric Analyzer (TGA).

Or

(b) What are the safety precautions to be followed during Explosive test?

13. (a) Explain in detail about ETA.

Or

(b) Explain about Hazard Analysis.

14. (a) Explain about hazard identification based on the properties of chemicals.

Or

(b) Explain about plotting the damage distance on Plot Plant / Layout.

15. (a) Explain in detail about Mexico Disaster case study.

Or

(b) Explain in detail about Seveso Disaster.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain in details about HAZOP Studies.

Or

(b) Explain about OH and S Audit in workplace.

17. (a) Explain in detail about Differential Scanning Calorimeter (DSC).

Or

(b) Write about FMEA.

18. (a) Explain in details about Port Hudson Disaster.

Or

(b) Discuss in details about Bhopal Disaster.

———————

C–1715	Sub. Code
	91063

B.Sc. DEGREE EXAMINATION, APRIL 2024.

Sixth Semester

Fire and Industrial Safety

BEHAVIOUR BASED SAFETY AND INDUSTRIAL ERGONOMICS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is perception?

2. Define personality.

3. What are the types of groups.

4. Define interpersonal relation.

5. What is BBS?

6. Give the importance of PPE.

7. Write the application of ergonomics.

8. What is incident?

9. Differentiate man vs machine.

10. Write about safety training.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) What are the form of workplace misbehaviours?

Or

(b) Write about management intervention.

12. (a) Explain group dynamics.

Or

(b) Write about emergency of informal leader in organisation.

13. (a) Explain ABC behaviour model consequences.

Or

(b) How to address ergonomics hazards?

14. (a) Explain the principle of motion economy.

Or

(b) Write about physiology of worker.

15. (a) Explain man machine interface.

Or

(b) Write about methods of reducing posture strain.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Write about learning theories.

Or

(b) Explain emotional intelligence.

17. (a) Write about group decision making techniques.

Or

(b) Explain safety culture in workplace.

18. (a) Draw and explain the organisation structure.

Or

(b) Explain motivation theories.

———————

C–2410	Sub. Code 91013

B.Sc. DEGREE EXAMINATION, APRIL 2024.

First Semester

Fire And Industrial Safety

BASICS OF FIRE SAFETY

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. Which one is used for safety and health sign?

   (a) Sign board (b) Colour

   (c) Acoustic signal (d) All the above

2. Expand APW

   (a) Air power water (b) Air pressurised water

   (c) Air powder water (d) Aviation problem water

3. Removal of heat

   (a) Starvation (b) Smothering

   (c) Cooling (d) Blanketing

4. Removal of fuel

   (a) Cooling (b) Starvation

   (c) Blanketing (d) Chain reaction

5. Expand: LEL

(a) Lower elite limit

(b) Lower explosive limit

(c) Lower energy limit

(d) Lone explosion level

6. SWL stands for?

(a) Safe working load (b) Server watch limit

(c) Safe worker load (d) Severe welfare load

7. Which method stands for fire extinguisher operation

(a) PASS (b) PISS

(c) PASS PASS (d) EXTING PLISS

8. Length of hydrant hose

(a) Minimum 14 m (b) Minimum 15 m

(c) Minimum 18 m (d) Minimum 20 m

9. Which colour is used to indicate mandatory sign?

(a) Red (b) Yellow

(c) Blue (d) Green

10. Who will ensure that workers wearing proper PPE?

(a) Safety officer (b) Supervisor

(c) Co worker (d) Public

Section B (5 × 5 = 25)

Answer **all** questions.

11. (a) Briefly explain about fire fighting techniques.

Or

(b) Write short note on explosion index.

12. (a) Explain about fire extinguisher maintenance.

Or

(b) Briefly explain about hazards of fire extinguisher.

13. (a) Write a short note on fire water storage tank specifications.

Or

(b) Explain about the functions of deluge fire sprinkler system.

14. (a) Explain briefly about Carbon dioxide suppression system.

Or

(b) Write a note on foam flooding system.

15. (a) Explain the hazards of flame detector.

Or

(b) How to maintain and service the emergency lights?

Section C (5 × 8 = 40)

Answer **all** questions.

16. (a) Write in detail about mode of heat transfer with diagram.

Or

(b) Explain in detail about classification of fire hazards.

17. (a) Explain in detail about modular fire extinguisher size and placement.

Or

(b) Explain in detail about types of fire protection.

18. (a) Describe in detail about fire extinguisher types.

Or

(b) Write in detail about Inspection and maintenance of fire pump room.

19. (a) Give outline about foam suppression system.

Or

(b) Explain the installation procedure for fire alarm panel.

20. (a) Write briefly about wiring methods of fire alarm system.

Or

(b) Explain in detail about function of flame detector.

———————

C–2411	Sub. Code
	91015

B.Sc. DEGREE EXAMINATION, APRIL 2024

First Semester

Fire and Industrial Safety

HUMAN RESOURCE DEVELOPMENT

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. ———— is a mechanism of maintaining good industrial relation

   (a) Negotiation

   (b) Collective bargaining

   (c) Both (a) and (b)

   (d) None of the above

2. ———— negatively affects innovation and courses major delays in the delivery of services.

   (a) Turnover

   (b) Brain Drain

   (c) Attrition rate

   (d) Unskilled manpower

3. ———————— is the underpinning of customer satisfaction with the organization.

(a) Loyal employee

(b) Enthusiastic employee

(c) Nurtured employee

(d) All of the above

4. Excessive turnover is an inevitable result of ————————

(a) Poor interment

(b) Poor management

(c) Poor communication skills

(d) Employee separations

5. Managers with ———————— vision experience excessive turnover

(a) Myopic

(b) Cohesion

(c) Galloping technology

(d) All of the above

6. Who said, "Companies that manage people right will outperform companies that don't by 30 to 40 per cent".

(a) Frederick Taylor

(b) Nadler

(c) Jefferey Pfeiffer

(d) Rober Oven

7. 'Layoff' better expressed as

(a) RIF (b) Position elimination

(c) Both (a) and (b) (d) None

8. Employee separation needs to be done with ———————— by HRM

(a) Human touch (b) Brain

(c) Planning (d) Progressive discipline

9. ———————— of basic information in HR records are necessary to find out the performance of the personal function

(a) Feedback (b) Response

(c) Result (d) Details

10. ———————— types of records include cards, charts etc.

(a) Conventional (b) Modern

(c) Both (a) and (b) (d) None of the above

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

Answer **all** questions.

11. (a) Explain the types of learning.

Or

(b) Write about any one motivation theory.

12. (a) How to implement HRD Programs?

Or

(b) Explain transactional analysis.

13. (a) How to monitor the impact of HRD programs?

Or

(b) Explain any five applications of human resource development.

14. (a) Write about employee counseling programs.

Or

(b) Is counseling a HRD activity? Justify.

15. (a) How to develop HRD programs?

Or

(b) Explain in detail about HR performance analysis.

Section C (5 × 8 = 40)

Answer **all** questions.

16. (a) Write about challenges to HRD professionals.

Or

(b) Draw and explain organization structure.

17. (a) Draw and explain HRD model.

Or

(b) How to create HRD programs?

18. (a) Write about models and frame work of evaluation.

Or

(b) List out the impact of HRD Programs.

19. (a) What are the activities of HR manager?

Or

(b) Give applications of employee counseling and wellness services.

20. (a) Write about workforce reduction.

Or

(b) Explain in detail about HRD programs for diverse employees.

———————

C–2412	Sub. Code 91023

B.Sc. DEGREE EXAMINATION, APRIL 2024.

Second Semester

Fire and Industrial Safety

ELECTRICAL AND CHEMICAL SAFETY

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **ten** questions.

1. As per the UN Classification of Dangerous Goods, Class 3 indicates:

   (a) Corrosive (b) Infectious substance

   (c) Flammable liquid (d) Radioactive

2. Spills of Chemicals should be

   (a) Cleaned up by trained employees

   (b) Reported immediately

   (c) Prevented by using seal containers

   (d) All of the above

3. On the multi-colored chemical label, Yellow represents

   (a) Personal Protective Equipment

   (b) Reactivity Hazard

   (c) Health Hazard

   (d) Fire Hazard

4. Which of these risks is associated with electricity?

(a) Shock (b) Fire

(c) Explosion (d) All of the above

5. Gloves used for electrical protection must be electrically tested every _____ month.

(a) 3 months (b) 6 months

(c) 12 months (d) Never

6. One of the three generally recognized hazards of electrical work is.

(a) Concussion (b) Falls

(c) Cuts (d) Arc Flash

7. OSHA requires the testing of a voltmeter after a voltage test on voltage above.

(a) 600 V (b) 277 V

(c) 208 V (d) 120 V

8. The minimum allowable workspace around electrical equipment is _____ inches deep.

(a) 30 (b) 24

(c) 48 (d) 36

9. A Safety Electrical One Line Diagram should be used to _____ all sources of electrical energy.

(a) Modify (b) Evaluate

(c) Castigate (d) Identify

10. Which of these can be used as insulating live-line tools for electrical protection?

(a) Shotgun sticks (b) Switch sticks

(c) Hot sticks (d) All of the above

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Define the following: (i) current, (ii) voltage, (iii) capacitor.

Or

(b) What is CPR? Briefly discuss the Indian Electrical Rules.

12. (a) Classify voltage and explain each type of voltage with a suitable example.

Or

(b) Briefly discuss the electrical causes of fire.

13. (a) Explore the protection against Under Voltage.

Or

(b) Write short notes on the circuit breaker.

14. (a) Define nanomaterials. And explore in detail the biohazard of nanomaterials.

Or

(b) State the need for and importance of atmospheric monitoring.

15. (a) Explain in detail about the transportation of hazardous chemicals.

Or

(b) List the PPE for chemicals and express the significance of it.

Part C

$(5 \times 8 = 40)$

Answer **all** the questions.

16. (a) Define overload and briefly discuss about the short circuits.

Or

(b) Briefly discuss about the international standards on electrical safety.

17. (a) How do we use electricity safely, and how do we mention the electricity energy leakage in detail?

Or

(b) Describe the national electrical safety code in detail.

18. (a) Elaborately discuss about overload relays.

Or

(b) Explain the need for and importance of personal protective equipment in electrical safety.

19. (a) List the types of chemicals and explain chemical hazards and their prevention methods in detail.

Or

(b) What are Lc50 and Ld 50 flammable limits? Briefly discuss about the globally harmonized system.

20. (a) Explain in detail about the management of hazardous chemicals.

Or

(b) Explore the general guidelines for safe storage and handling of chemicals.

———————

C–2413	Sub. Code 91025

B.Sc. DEGREE EXAMINATION, APRIL 2024

Second Semester

Fire and Industrial Safety

WAREHOUSE MANAGEMENT

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the questions.

1. What is the significance of SKU in warehouse management?
   (a) Special Knowledge Unit
   (b) Stock Knowledge Utility
   (c) Storage Knowledge Update
   (d) Stock Keeping Unit

2. What is the main purpose of returns management in warehouse management?
   (a) To reduce labor costs
   (b) To track inventory levels
   (c) To process customer returns efficiently
   (d) To optimize warehouse space

3. Why is labor management important in warehouse operations?
   (a) To reduce labor costs
   (b) To track inventory levels
   (c) To ensure timely order fulfilment
   (d) To optimize warehouse space

4. Which component of warehouse management involves determining the most suitable storage locations for different products?
   (a) Storage
   (b) Order Picking
   (c) Inventory Management
   (d) Receiving

5. What is the purpose of order packing in warehouse management?
   (a) To inspect incoming shipments
   (b) To retrieve products from storage
   (c) To tract inventory levels
   (d) To prepare products for shipping

6. Why is accurate inventory management important in warehouse management?
   (a) To prevent stockouts and overstock situations
   (b) To improve order picking efficiency
   (c) To reduce labor costs
   (d) To optimize warehouse space

7. What technology is commonly used in warehouse management to track and manage inventory levels?
   (a) Artificial Intelligence (AI)
   (b) Barcode scanners
   (c) Warehouse Management Systems (WMS)
   (d) Virtual Reality (VR)

8. Which component of warehouse management involves retrieving products from storage to fulfil customer orders?
   (a) Packing and Shipping
   (b) Inventory Management
   (c) Order Picking
   (d) Receiving

9. What does the process of receiving in warehouse management involve?
   (a) Organizing products in the warehouse
   (b) Managing inventory levels
   (c) Accepting and inspecting incoming shipments
   (d) Packing and shipping orders

10. What is the primary goal of warehouse management?
   (a) Reducing labor costs
   (b) Minimizing inventory levels
   (c) Ensuring timely order fulfillment
   (d) Maximizing warehouse space

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

Answer **all** the questions.

11. (a) Explore the concepts of warehousing.

Or

(b) Describe the characteristics of ideal warehouses.

12. (a) What is inventory? Briefly discuss inventory management.

Or

(b) Briefly discuss the finished goods inventory.

13. (a) Write short notes on the necessity of warehouse management systems.

Or

(b) Explain distribution resource planning.

14. (a) Describe in detail ABC inventory control.

Or

(b) Elaborately discuss about the true multi echelon approach.

15. (a) Explore the principle of material handling systems.

Or

(b) Shortly discuss about effective performance systems.

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

Answer **all** the questions.

16. (a) List the types of warehouses. And explain in detail about it.

Or

(b) Elaborately discuss the various warehousing facilities.

17. (a) What is Wip inventory? Briefly discuss about the role in the supply chain.

Or

(b) Describe in detail about the need to hold inventory.

18. (a) Briefly discuss about the dependent demand system.

Or

(b) Describe the uncertainties in material management systems.

19. (a) Briefly discuss about Echelon inventory systems.

Or

(b) Explain how to manage inventory in single echelon networks.

20. (a) Mention the types of material handling systems and explain the Vehicle Travel Path in detail.

Or

(b) Briefly discuss the applications of Rfid Technology.

———————