C–7123	Sub. Code 91013

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

First Semester

Fire and Industrial Safety

FIRE PREVENTION AND PROTECTION

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is Fire Protection?

2. Explain firefighting methods.

3. Define fire Load.

4. Define Smoke Sensor.

5. What are the reasons for Fire?

6. Mention the types of fire detection system.

7. Define Fire triangle.

8. Define Dry Chemicals.

9. Define explosion.

10. State NEC.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain about the importance of Fire Safety and reasons for fire.

Or

(b) Discuss about fire properties of solids, Liquids and gases.

12. (a) Explain various classes of fire with examples.

Or

(b) Explain about Water based Sprinkler systems.

13. (a) Explain the fire safety requirements for high rise building.

Or

(b) Explain about fire fighting system and give its merits and demerits.

14. (a) Explain any one fire related case studies.

Or

(b) Brief about explosion and principles of explosion.

15. (a) Explain about local exhaust ventilation.

Or

(b) Explain the installation and specification of fire hydrant system.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain the considerations and Installation of fire detectors with its types.

Or

(b) Write notes on fire extinguisher, its parts, types, operation methods and maintenance.

17. (a) Explain the features of Indian explosive act and rules.

Or

(b) Explain sprinkler and Fire alarm system in detail with types.

18. (a) Explain flammability range with LEL and UEL.

Or

(b) Write notes on handling, storage and Transportation of Flammable and Combustible liquids.

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C–7124	Sub. Code
	91014

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

First Semester

Fire and Industrial Safety

PERSONAL PROTECTIVE EQUIPMENTS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define PPE and importance of PPE.

2. Differentiate : Sound and Noise.

3. Write the emergency safety measures of Eye protection.

4. What is consistence?

5. Define Fall arrester.

6. What is safety harness?

7. What is the use of machine guards?

8. Mention the types and purpose of hand gloves

9. Write the cause and effects of poor Safety shoes.

10. Mention some hygiene hazards at workplace.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain the associated hazards and protection measures of head protection.

Or

(b) Draw and explain about the eye protection with checklist.

12. (a) Explain the safety measures of skin protection and hazards involved in chemicals.

Or

(b) Explain about noise Hazards.

13. (a) Explain the prevention of hand injures and types of hand protection.

Or

(b) Explain about the prevention measures of chemical substances (or) chemical spills.

14. (a) Write short notes on canisters.

Or

(b) Write short notes on SCBA.

15. (a) Brief about the standards for PPE as per factories act 1948.

Or

(b) Explain about the working principle of a fall arresters and its maintenance.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain about respiratory protection.

Or

(b) Explain about eye protection, its Hazards and safety measures.

17. (a) Explain about skin protection PPE.

Or

(b) Explain about Leg Protection PPE.

18. (a) Explain about the common physical or direct Hazards involved at workplace along with suitable PPE's to prevent.

Or

(b) Explain factories act 1948, with chapters.

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C–7125	Sub. Code 91015

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

First Semester

Fire and Industrial Safety

ELECTRICAL SAFETY

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is Resistance?

2. Define Voltage.

3. What is Scalds?

4. Illustrate LOTO.

5. Define Electrocution.

6. What is cable Management?

7. Describe the preventive Safety measures of cable in workplace.

8. Define earthing.

9. Define Ionization.

10. Define National Electrical Safety Code.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Illustrate LOTO and types.

Or

(b) Explain classification of Hazardous Zones.

12. (a) Explain types of Hazards in electricity.

Or

(b) Explain about Electrical Guarding System.

13. (a) Explain about lighting Hazards and Lighting arrestor.

Or

(b) Brief about Safety in handling portable electrical equipment.

14. (a) Give Short notes on Electrical joints and connection.

Or

(b) Write short notes on selection of equipment for different zones.

15. (a) Explain about electrical equipment certifying agencies.

Or

(b) Explain about overload 7 short circuit protection.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain CPR.

Or

(b) Explain in detail about the types of electrical faults and effects of shock.

17. (a) Discuss about ELCB with neat sketch.

Or

(b) Explain about the steps of minimizing electrical Hazards.

18. (a) Explain about Indian Electricity rule.

Or

(b) Explain classification of Hazardous zones and selecting of equipment for different zones.

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C–7126	Sub. Code
	91023

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

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. State the significance of material handling.

2. Write about the types of material handling.

3. Why crane is required?

4. List out the types of cranes.

5. Where the Conveyors are used?

6. Point out the usage of Hoists.

7. Classify Slings.

8. Give few tips to maintain chain slings.

9. List out the types of trucks.

10. Define 'Ergonomics'.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Explain the accessories used in manual handling with its uses.

Or

(b) Brief personal protection and its equipments.

12. (a) Write down the steps to control crane accidents.

Or

(b) Brief the Third party Inspection.

13. (a) Why guarding is needed and show its types?

Or

(b) Point out the safety measures before using industrial vehicles.

14. (a) Explain the various factors which affect the wire rope performance.

Or

(b) State the purpose of Hooks and Shackles.

15. (a) Describe the steps of trucks inspection and maintenance.

Or

(b) Explain the power elevators and their types in details.

Part C

$(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) Discuss about the safety measures in material handling.

Or

(b) Describe the precautions to be taken in material handling by machines.

17. (a) List out the factors which retards crane performance.

Or

(b) Draw a check list for crane maintenance.

18. (a) State various hoist maintaining techniques for its betterment.

Or

(b) As a safety officer mention your ideas for good industrial performance.

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C–7127	Sub. Code
	91024

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

Second Semester

Fire and Industrial Safety

CHEMICAL SAFETY

(2019 onwards)

Duration: 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Write few words on 'Safety'.

2. Classify Chemicals.

3. Define 'Hazard'?

4. Give examples for hazardous chemicals.

5. State the requirements to store harmful chemicals.

6. Mention the hazards expected during chemical handling.

7. What is PHA?

8. Brief LPG.

9. Write few precautious measures followed in a chemical lab.

10. Classify hazards.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Write short notes on risks in chemical storage.

Or

(b) Differentiate Explosive and Flammable limits.

12. (a) State various hazards on chemical transportation.

Or

(b) Write about HAZCHEM code.

13. (a) Describe the safe methods for chemical handling.

Or

(b) State the effects of toxic and corrosive substances on human body.

14. (a) Brief the importance of employee training on chemical handling.

Or

(b) Describe the safe practices for oil storage and handling.

15. (a) Write short notes on Chemical hazards and Biological hazards

Or

(b) Discuss about Chemical and Biological spills and their effects.

Part C

$(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) Brief various risks related with the hazardous chemicals handling.

Or

(b) Why labelling of chemical is essential?

17. (a) Brief chemical exposure risk assessment.

Or

(b) State the precautious steps during a chemical hazard.

18. (a) Discuss about the public responsibilities on a chemical exposure.

Or

(b) Why a good house keeping is recommended for a chemical industry.

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C–7128	Sub. Code
	91025

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

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 do you mean by 'Hygiene'?

2. Write about the various systems in our body.

3. Give types of Radiation.

4. Name few personal protective equipments.

5. Mention the factors for toxic hazard.

6. Justify the various effects of toxic materials.

7. Specify the importance of 'Ergonomics'.

8. What do you mean by the term "Tendinitis'?

9. Stress the significance of sampling.

10. Explain BEI.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) What is Industrial Hygiene? - Brief.

Or

(b) Explain the digestive and distribution of our human body in detail.

12. (a) What are the effects of thermal and illumination exposures?

Or

(b) How we eleiminate physical hazards effectively?

13. (a) State the various entering points of toxic materials in human body.

Or

(b) Write short notes on (i) Exposure Limits and (ii) TLV.

14. (a) Describe Man - Machine system.

Or

(b) How the design of job and work place affect the productivity?

15. (a) State various air sampling methods.

Or

(b) Describe various medical tests conducted on human body.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) How poor hygiene affects the human system?

Or

(b) Brief the effect of noise.

17. (a) Justify the causes of toxic effects with their remedies.

Or

(b) What are the risks expected in a hazardous working environment?

18. (a) Discuss about the administrative control to improve work place safety.

Or

(b) Explain how industrial hygiene improves safety measures.

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C–7129	Sub. Code 91026

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

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. Define 'Management'.

2. Brief the word 'Safety'.

3. Why audit is required?

4. Classify audit.

5. Give your ideas to prevent accident.

6. Write down the steps to be taken after an accident.

7. List out the types of disabilities.

8. How Severity Rate is calculated?

9. Write about few training methods?

10. State the purpose of training.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Explain the terms (i) Productivity (ii) Quality and (iii) Safety Policy.

Or

(b) State the Managers' role in Safety.

12. (a) Brief the 'Audit Methodology'.

Or

(b) Explain the unsafe act and unsafe condition with an example.

13. (a) State the principles of accident prevention.

Or

(b) Point out the role of 'Safety Committee'.

14. (a) What do you mean by disability? and give its types.

Or

(b) Write short notes on 'Accident Indices'.

15. (a) Describe the training methods.

Or

(b) State the Government role on safety implimentation.

Part C

$(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) Write down the safety measures to improve safety in an automobile industry.

Or

(b) How you motivate workers towards safety?

17. (a) Point out you ideas to control accidents.

Or

(b) Discuss about the function of safety committee in details.

18. (a) What type of training is needed to enhance safety?

Or

(b) As a safety officer what are your duties in an industry.

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C–7130	Sub. Code 91032

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

Third Semester

Fire and Industrial Safety

INDUSTRIAL SAFETY AND LEAN CONCEPTS

(2019 onwards)

Duration: 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define industrial safety.
2. What is the importance of safety?
3. Define hazard analysis.
4. What is conditioning monitoring?
5. Define industrial hygiene.
6. What is an ergonomic hazard with an example?
7. Define static electricity.
8. What is the importance of housekeeping?
9. What is the purpose of war room?
10. Define leadership.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Give short notes on cost of accident.

Or

(b) Explain the human factor in detail.

12. (a) Give short notes on plant inspection and maintenance.

Or

(b) Give short notes on handling and storage of chemical and hazardous material.

13. (a) Give short notes on industrial toxicology.

Or

(b) Discuss on various types of workplace ergonomic hazards.

14. (a) Give short notes on slipped disc syndrome.

Or

(b) Discuss on principle and feature of manual handling.

15. (a) Give short notes on GEMBA principle.

Or

(b) Explain the steps of kaizen blitz in detail.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain in detail about magnetic particle testing methods.

Or

(b) Explain the element of safety audit in detail.

17. (a) Explain in detail about liquid penetrant testing methods.

Or

(b) Explain the various types metal casting in details.

18. (a) Explain in detail about causes, symptoms, effects and control measure of radiation hazards.

Or

(b) Explain the POKE-YOKE technique in detail.

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C–7131	Sub. Code
	91033

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

Third Semester

Fire and Industrial Safety

SAFETY IN CONSTRUCTION SECTOR

(2019 onwards)

Duration: 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is the importance of site layout?
2. Define vibration.
3. What are the causes of accident?
4. What is the importance of fencing?
5. Define safe load indicator.
6. What is the purpose of forklift?
7. What is scaffold?
8. Define structural steel work.
9. What are the hazards presents in working posture?
10. Define cartridge operated tool.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Give short notes on selection, use, maintenance and standards for head protection and hearing protection.

Or

(b) Define fall hazards. Write causes, consequence and control measure for fall hazards.

12. (a) Give short notes general safety measure for excavation.

Or

(b) Discuss on confined space hazards and it is safety measures.

13. (a) Give short notes on traffic management during road construction.

Or

(b) Give short notes on inspection and maintenance of mobile cranes.

14. (a) Define independent tied scaffold. Write general safety measures prevent hazards.

Or

(b) Discuss on putlog scaffolding and it is application.

15. (a) Give short notes on selection, use and maintenance of hand tool.

Or

(b) Give short notes on causes, precaution and control measure for welding working.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain in detail about welfare facilities in BOCW act 1996.

Or

(b) Explain the different soil test methods for building construction in detail.

17. (a) Explain in detail about Indian explosive act 1984.

Or

(b) Explain the guidelines for loading blasting agent in detail.

18. (a) Explain the pilling and deep foundation work related hazards and control measures in detail.

Or

(b) Explain in detail about general safety measures in tunnelling works.

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C–7132	Sub. Code
	91034

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

Third Semester

Fire and Industrial Safety

EHS LAWS AND ACTS

(2019 onwards)

Duration: 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is the purpose of factory act 1948?

2. What is the role of the welfare officer?

3. Define environmental pollutant.

4. What are the objectives of EPA 1986 ?

5. What are the general duties of authority under MSIHC rule 1989?

6. Define toxic chemical.

7. What is PESO license?

8. Why electricity act important?

9. What are the objectives of ANSI?

10. What are the benefits of OHSAS 1800?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Give short notes on role and work of certifying surgeon under factory act 1948.

Or

(b) Give short notes on chapter 3 under factory act 1948?

12. (a) Discuss on prevention and control of air pollution .

Or

(b) Give short notes on power and function of state and central board of environmental act.

13. (a) Give short notes on notification of major accident under MSIHC rules 1989.

Or

(b) Give short notes on preparation of on-site emergency plan by the occupier under MSIHC rules.

14. (a) Give short notes on function and importance of static and mobile pressure vessel rules.

Or

(b) Discuss on salient features of workmen compensation act.

15. (a) Give short notes on importance of OHSA 1970.

Or

(b) Give short notes on general duty under HSWA 1974.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain in detail about importance of various sections chapter IV under the factory act 1948.

Or

(b) Explain the salient feature of pesticides act in detail.

17. (a) Explain the biomedical waste(management and handling) rules in detail..

Or

(b) Explain the major advantage and importance of noise pollution (regulation and control) rules 2000.

18. (a) Explain the BOCW act 1996 in detail.

Or

(b) Explain in detail about mines act 1952.

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C–7133	Sub. Code
	91035

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

Third Semester

Fire and Industrial Safety

INCIDENT PREVENTION, CONTROL, INVESTIGATION AND REPORTING

(2019 onwards)

Duration: 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define accident.
2. What are the different types of accident?
3. What are the heinrich industrial safety principles?
4. Define heinrich triangle theory.
5. Define PPE.
6. What are the objectives of hierarchy control measures?
7. Define MORT techniques.
8. What is the purpose of accident investigation ?
9. What is difference between accident and death?
10. Define reportable disabling injury.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Give short notes on reportable accident with an example.

Or

(b) Give short notes on importance of accident report maintaining.

12. (a) Give short notes on multi causation theory

Or

(b) Give short notes on importance of behavioural theory.

13. (a) Give short notes on accident prevention through design.

Or

(b) Give short notes on different types of PPE's.

14. (a) Give short notes on barrier analysis method of accident investigation.

Or

(b) Give short notes on change analysis method of accident investigation.

15. (a) Give short notes on disabling and non-disabling injury with an example.

Or

(b) Give short notes on computation formula for frequency, severity and incident rate.

Part C

(3 × 10 = 30)

Answer **all** questions.

16. (a) Explain in detail about FORM 18 accident report under factory act.

Or

(b) Explain the heinrich domino theory in detail.

17. (a) Explain in detail about fault tree analysis with an example.

Or

(b) Explain the systematic cause analysis technique in detail.

18. (a) Explain in detail about importance and use of pure chance theory.

Or

(b) Explain the salient feature and working principle of energy transfer theory in detail.

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C–7134	Sub. Code
	91042

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

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. Write the types of fire.

2. Define fire load.

3. Write the causes of fire accident.

4. What is called fire ball?

5. Define fire hydrant.

6. Write short notes on Fire pump room.

7. What is called fire brigade?

8. Define the term flooding.

9. Define flame detector.

10. List few major roles of fire service.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Discuss about the PPE used for fire protection.

Or

(b) Classify the types of fire based on size.

12. (a) Write short notes on passive fire protection.

Or

(b) Explain the working principle of fire extinguishers.

13. (a) List the major components used in fire fighting system.

Or

(b) Explain the working principle of fire sprinkler system.

14. (a) Discuss the co2 suppression system.

Or

(b) Write short notes on installation of foam flooding.

15. (a) Write the concepts of fire alarm.

Or

(b) Write few safely methods used by other countries.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Discuss the NBC classification based on occupancy.

Or

(b) Explain the various fire fighting techniques in detail.

17. (a) Describe the maintenance and service of fire extinguisher.

Or

(b) Discuss about the design of fire hydrant system.

18. (a) Describe the functions of various fire safely detectors.

Or

(b) Explain the roles and responsibilities of fire safely officer.

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C–7135	Sub. Code 91043

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

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. Define LEL and UEL.

2. What is HIRA?

3. Define safety induction training.

4. Define safety Audit.

5. Define HAZOP.

6. What is temporary total disabilities?

7. Define compliance Audit.

8. What is investigation?

9. Define ERP.

10. Stat employer and employee.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain training and its types.

Or

(b) Brief the design codes and standards of materials in a process safety management.

12. (a) Explain FMEA.

Or

(b) Explain HAZOP.

13. (a) Explain Quality assurance and management of change.

Or

(b) Write short notes on ERP.

14. (a) Explain about the investigation questionnaire.

Or

(b) Explain the process involved in contractor selection and maintenance.

15. (a) Brief the principle of contractor employee responsibilities.

Or

(b) Brief the principle of employer responsibilities.

Part C

(3 × 10 = 30)

Answer **all** questions.

16. (a) Explain about JSA.

Or

(b) Explain in detail about ventilation system classification, its design with codes and standards.

17. (a) Explain in detail about investigation methodologies and investigation questionnaire procedure.

Or

(b) Explain PHA.

18. (a) Explain about Safety survey and Safety Inspection.

Or

(b) Write notes about hot work activity, its requirements, safety measures and PPE.

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C–7136	Sub. Code
	91044

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

Fourth Semester

Fire and Industrial Safety

HAZARD IDENTIFICATION, RISK ASSESSMENT AND RISK CONTROL

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. What is fault tolerance?

2. Define risk register.

3. State the consequences of PHA.

4. Define LOPA.

5. What is Human reliability Analysis?

6. State HAZOP methodology.

7. Define risk estimation.

8. Define risk priority number.

9. Define FTA.

10. What is plant ageing?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain the fundamental Safety of basic Hazard and Risk.

Or

(b) Write short notes a risk matrix and features of risk matrix.

12. (a) State the comparison of various PHA methods.

Or

(b) Brief the description of risk register.

13. (a) Write notes on Hazard Identification and Evaluation.

Or

(b) Explain about the plant ageing.

14. (a) Describe about FMEA procedure.

Or

(b) State the differences between risk management, risk assessment and risk Analysis.

15. (a) Write notes on combustible/flammable gas detector.

Or

(b) Explain about third party certification of Safety Instruments.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain the generalized risk ranking methods flow chart.

Or

(b) Explain ALARP.

17. (a) Explain HAZOP methodology.

Or

(b) Explain in detail about LOPA.

18. (a) Write notes on safety instrumentation system.

Or

(b) Write notes on explosion protection.

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C–7137	Sub. Code
	91045

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

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 is the purpose of work place inspections?

2. State Audit objectives.

3. Define Auditor.

4. What do you mean by follow-up and Monitoring?

5. State Environmental Policy.

6. State audit methodology.

7. Define TPI.

8. What is Action plan?

9. What is closing of meeting?

10. Mention the steps for executing Audit.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain the benefits of Audit process.

Or

(b) Explain the importance and purpose of workplace inspection.

12. (a) Explain Pre-Audit screening.

Or

(b) Brief the post Audit Activities.

13. (a) Explain Compliance audit.

Or

(b) Explain about audit needs assessment.

14. (a) Explain audit documentation and reports.

Or

(b) Comparison of ISO 45001 and OSHAS 18001.

15. (a) Explain ONSITE inspection.

Or

(b) Explain about third party inspection, its purpose and need.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Write notes an importance of ISO 14000 to the management.

Or

(b) Explain audit with its types and methodology.

17. (a) Explain detail about audit plan ISO 14040 (LCA).

Or

(b) Describe the development, structure and features of OSHAS 18001.

18. (a) Write notes on code of practice on OSHA Audit.

Or

(b) Explain the general principles of environmental audit ISO 14001.

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C–7138	Sub. Code
	91051

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

Fifth Semester

Fire and Industrial Safety

SAFETY IN HIGH HAZARDOUS AREAS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. What is meant by hazardous area?

2. Define explosion pentagon.

3. What are the three main categories of emission sources?

4. What is the difference between first degree and second degree?

5. Define pressurized enclosure.

6. What is flashover in electricity?

7. What is the use of oil filled enclosure?

8. What is difference between intrinsic and extrinsic safety?

9. Define static electricity.

10. What are the advantages of intrinsic safety?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Give short notes on design feature of non-spark equipment.

Or

(b) Give short notes on online monitoring expert system.

12. (a) Give short notes on procedure for classification of hazardous area.

Or

(b) Give short notes on NFA regulation for design of explosion proof equipments.

13. (a) Give short notes on commercial and industrial application of corona electrical discharge.

Or

(b) Give short notes on importance and design feature of pressurized equipment.

14. (a) Give short notes on salient feature of explosion proof enclosure in hazardous area.

Or

(b) Give short notes on methods of purge and pressurization protection enclosure.

15. (a) Discuss on active and passive barriers system.

Or

(b) Give short notes on sources of mechanical impact and friction with an example.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain in detail about working principle and design feature of intrinsic safety equipment.

Or

(b) Explain the causes, consequence and control measures for ionizing radiation in detail.

17. (a) Explain in detail about mechanism of corona electrical discharge with neat diagram.

Or

(b) Explain in detail about standards and certification for purge and pressurization equipment.

18. (a) Explain in detail about safety and maintenance of SF_6 gas insulated equipment and also their advantages and disadvantages.

Or

(b) Explain in detail about hermetic sealing and encapsulation protection methods.

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C–7139	Sub. Code 91052

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

Fifth Semester

Fire and 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. What are the major hazards in oil and gas industry?

2. What is the principle of safety management?

3. Define root cause analysis.

4. What is the objective of interface safety analysis?

5. What is the most common injury in rig site?

6. Define explosion.

7. How do human factor affect safety?

8. How to prevent accident in oil and gas industry?

9. What is the significance of safety in oil and gas industry?

10. Define emergency action plan.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Give short notes on domino theory and it is use.

Or

(b) Give short notes on multiple causation theory.

12. (a) Write short notes on steps for root cause analysis.

Or

(b) Give short notes on HAZOP procedure.

13. (a) Give short notes on Mumbai high north platform incident effects and control measure.

Or

(b) Give short notes on cause, consequence and safety measure for Bohai 2 oil accident.

14. (a) Discuss on 12 common human error in oil and gas industry.

Or

(b) Give short notes on oil field fatality analysis.

15. (a) Give short notes on world-wide offshore accident data bank.

Or

(b) Explain the causes, consequences and control measure of onshore accident in oil and gas industry.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain in detail about human error classification.

Or

(b) Explain the FMEA in detail.

17. (a) Explain the causes, consequence of piper alpha accident.

Or

(b) Explain in detail about sea crest drillship accident.

18. (a) Explain in detail about accident/incident theory.

Or

(b) Explain in detail about product safety organization tasks.

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C–7140	Sub. Code 91053

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

Fifth Semester

Fire and Industrial Safety

SAFETY ASPECTS IN INDUSTRIAL PLANT LAYOUT

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. Define plant layout.

2. What is the advantage of fixed position layout?

3. Write the significance of NDT testing?

4. What is the safety precaution for storage of chemicals?

5. Define computerized layout.

6. What is the purpose of CORELAP.

7. What is the principle of ventilation system?

8. What are the typical accidents happen due to poor housekeeping.

9. Define ergonomic hazards.

10. What is slewing mechanism?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Give short notes on factor influencing plant layout.

Or

(b) Give short notes on design and function of product layout.

12. (a) Give short notes on break even analysis methods of plant location.

Or

(b) Give short notes on centre of gravity method of plant location.

13. (a) Give short notes on importance and use of CORELAP layout methods.

Or

(b) Explain the JIT operation in detail.

14. (a) Discuss on role of preventive maintenance.

Or

(b) Give short notes on 5S principles.

15. (a) Give short notes on general safety consideration in ropes manual handling.

Or

(b) Give short notes on design, operation and maintenance of screw conveyor equipment.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain in detail about importance of standards and codes of practice for plant and layout.

Or

(b) Explain in detail about factor affecting the plant location.

17. (a) Explain in detail about importance and legal requirement of waste treatment and disposal in site.

Or

(b) Explain in detail about various step in plant location.

18. (a) Explain the die penetration test in detail.

Or

(b) Explain in detail about ALDEP technique.

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C–7141	Sub. Code 91054

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

Fifth Semester

Fire and Industrial Safety

SAFETY IN LOGISTICS AND WAREHOUSE SAFETY

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. Define logistic system design.

2. What is role of warehouse manager?

3. Define static electricity.

4. What are the benefits of driver safety incentive program?

5. What is the function of cranes in warehouse?

6. What is forklift training?

7. Define sling load angle.

8. What are the safety precautions for slings?

9. Define fire load.

10. What is the passive fire protection system?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Give short notes on significance of warehousing in logistics.

Or

(b) Give short notes on function and types of warehouses.

12. (a) Give short notes on inspection and maintenance of tanker lorries.

Or

(b) Give short notes on safe driving incentive program.

13. (a) Explain in detail about inspection, maintenance and safety measures for forklift handling.

Or

(b) Give short notes on various types of warehouse cranes.

14. (a) Give short notes on salient features of double girder EOT cranes.

Or

(b) Give short notes on handling and maintenance of chain and slings.

15. (a) Give short notes on fire explosion and toxicity index.

Or

(b) Give short notes on importance of fire resistance of building materials.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain in detail about warehouse management system.

Or

(b) Explain the emergency planning system in detail.

17. (a) Explain in detail about orientation, on-boarding and training program for drivers.

Or

(b) Explain in detail about manual material handling.

18. (a) Explain in detail about working procedure and types of alarm and detection system.

Or

(b) Explain in detail about safety precaution for handling and storage of compressed gas cylinder.

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C–7142	Sub. Code 91055A

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

Fifth Semester

Fire and Industrial Safety

SAFETY IN TEXTILE INDUSTRIES

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What are the major hazards in textile industry?

2. What is the purpose of machine guarding?

3. Define weft knitting machine.

4. What is the purpose of wrap knitting machine?

5. What is the process of scouring?

6. What is bleaching process?

7. Define occupational diseases.

8. Define Noise.

9. What are the categories of textiles?

10. What are the two primary methods of waste disposal?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Give short notes on process flow chart of short staple spinning.

Or

(b) Give short notes on process flow chart of long staple spinning.

12. (a) Give short notes on causes, consequence and control measure of sizing processes.

Or

(b) Give short notes on different types of non-woven fabric process.

13. (a) Give short notes on objective and methods of scouring process in textile industry

Or

(b) Give short notes on purpose and chemical requirement for bleaching process in textile industry.

14. (a) Give short notes on welfare measures in textile industry.

Or

(b) Give short notes on health hazards, effects and control measures for exposure of cotton dust in textile industry.

15. (a) Give short notes on importance of effluent treatment in textile industry.

Or

(b) Give short notes on active and passive noise control methods.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain in detail about process flow charts of viscon rayon manufacture process.

Or

(b) Explain in detail about causes, types of guarding and safety precaution for flyer frame and ring frames.

17. (a) Explain the process flow chart of filament yarn to fabric manufacture process in detail.

Or

(b) Explain in detail about causes of accident, safety precaution and guarding of machinery for cotton opening and carding machine.

18. (a) Explain the major health and safety issues in textile industry.

Or

(b) Explain in detail about special precautions for hazardous work environment.

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C–7143	Sub. Code 91055B

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

Fifth Semester

Fire and Industrial Safety

DUST EXPLOSION

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is minimum ignition energy?

2. Define explosion.

3. Define electrostatic charge.

4. What is the purpose of power coating?

5. Define dust sampling.

6. What are the importance of housekeeping?

7. Define flammability.

8. What is the purpose of burn rate test?

9. What is the purpose of explosion vent?

10. Define automatic suppression system.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Give short notes on element of dust explosion pentagon with an example.

Or

(b) Give short notes on prevention of primary and secondary explosion.

12. (a) Give short notes on working principle of surface grinding machine with neat diagram.

Or

(b) Give short notes on working procedure of salt conveyor and it is benefit.

13. (a) Give short notes on evaluation procedure and control measures for particulates.

Or

(b) Give short notes on evaluation procedure and control measures for asbestos.

14. (a) Give short notes on combustibility test at room temperature.

Or

(b) Give short notes on working principle and use of friction sensitivity.

15. (a) Give short notes on dust control by ESP methods.

Or

(b) Give short notes on function of explosion venting system.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain in detail about hierarchy control measure for dust collector system.

Or

(b) Explain in detail about handling and safety precaution of nano powders in explosion area.

17. (a) Explain in detail about working principle of belt conveyor and it is types.

Or

(b) Explain in detail about working principle of bucket conveyor with neat diagram.

18. (a) Explain in detail about prevention and removal process of dust accumulation in process equipment.

Or

(b) Explain the dust control of air bag and cyclone methods in detail.

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C–7144	Sub. Code 91055C

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

Fifth Semester

Fire and Industrial Safety

SAFETY IN MINING INDUSTRIES

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What are the preventive measures against mine fires?

2. What are the main causes of accidents in the mines?

3. Define fire triangle.

4. What is proximity warning device?

5. Define electrical hazards

6. How to prevent ground collapse?

7. What is basic concept of risk?

8. Define reliability.

9. What is reportable accident?

10. What is direct and in-direct cost of accident?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Give short notes on causes and prevention of accident from heavy machinery in mining industry.

Or

(b) Give short notes on fire prevention measures in mining industry.

12. (a) Give short notes on occupational hazards and effects in mining industry.

Or

(b) Give short notes on prevention and control measure for water flood in mining industry

13. (a) Give short notes on importance of ventilation and lighting in mining industry.

Or

(b) Give short notes on mechanism analysis of tunnel collapse in mining industry.

14. (a) Give short notes on general procedure for risk assessment in mining industry.

Or

(b) Give short notes on procedure of fault tree analysis.

15. (a) Give short notes on improving safety measures in mining industry.

Or

(b) Give short notes on accident occurrence investigation.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain in detail about handling of explosive in mining industry.

Or

(b) Explain in detail about sources and causes of inundation in mining industry.

17. (a) Explain in detail about causes and prevention of accident from belt and bucket conveyor in mining industry.

Or

(b) Explain in detail about different types of PPE's using in mining industry.

18. (a) Explain in detail about emergency preparedness in mining industry.

Or

(b) Explain in detail about selection, causes and control measure for electrical system in mining industry.

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C–7145	Sub. Code 91055D

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022

Fifth Semester

Fire and Industrial Safety

SAFETY IN AIRPORT AND SHIPYARD

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Why environmental protection act implemented?

2. What are the duties of dock workers?

3. What is the importance of efficient lighting system in shipyard?

4. Define hatch beam.

5. What is difference between rope and slings

6. What are the types of natural fibre ropes?

7. What is the carriage of dangerous goods?

8. What are the types of cargo handling equipment's?

9. Define emergency action plan

10. What is difference between fire and explosion?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Give short notes on basic structure, role and work of advisory committee in dock worker act 1986?

Or

(b) Give short notes on methods and importance of training for dock workers.

12. (a) Give short notes on safety in handling of hatch beams.

Or

(b) Give short notes on safety in chipping and painting operation on boarding ship.

13. (a) Give short notes on various methods of rigging for derricks.

Or

(b) Give short notes on safety measures and use of portioners lifting equipment's.

14. (a) Give short notes on safety measures in self-loading container vehicle.

Or

(b) Give short notes on stacking and unstacking both on board the ship and ashore

15. (a) Give short notes on emergency action plan for collapse of lifting appliances.

Or

(b) Give short notes on safety precautions for spillage of dangerous goods.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain in detail about power of inspector under dock workers act.

Or

(b) Explain in detail about source, causes and safety measures in working inside in ship deck.

17. (a) Explain in detail about construction, maintenance and use of hallen swinging derricks.

Or

(b) Explain in detail about safety features in different types of mechanical operation hatch cover.

18. (a) Explain in detail about on and off site emergency plan.

Or

(b) Explain the different types of slings and loose gears in detail.

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C–7146	Sub. Code 91061

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022.

Sixth Semester

Fire and Industrial Safety

SAFETY MANAGEMENT SYSTEMS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. What is Near Miss?

2. Define MIS.

3. State Haddon's Principle.

4. Define Tool Box Talk.

5. State modern methods of Safety Training.

6. What is Safety Induction Training?

7. What is manageable Communication?

8. Mention the purpose of employee participation in Safety.

9. What is motivation?

10. Define Safety culture.

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

Answer **all** questions.

11. (a) Write short notes on role of management and management principles of OSHAS / IS-18001.

Or

(b) Explain the use of IT tools in managing SHE tools.

12. (a) Explain the effective planning for Safety.

Or

(b) Brief about Managenal Communication.

13. (a) Explain the modern methods of Safety training.

Or

(b) Discuss about job Instructions VS Safety instructions.

14. (a) Write short notes on modern methods and techniques of Safety promotion.

Or

(b) Discuss about the Human factors contributing to Accidents and control measures.

15. (a) Explain about theories of motivation and their application of safety.

Or

(b) Discuss about the perception of danger and acceptance of Risk.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain about the theories of accident occurrences in detail.

Or

(b) Explain the use of modern methods of programming.

17. (a) Explain in detail about effective planning organisation structure for Safety Department.

Or

(b) Explain Evaluation and review of Training Programme for Managers, Supervisors, Workers, contractors and visitors.

18. (a) Explain the behavioural Safety and Psychological aspect of safety.

Or

(b) Write notes on theories of motivation and their application of Safety.

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C–7147	Sub. Code 91062

B.Sc. DEGREE EXAMINATION, NOVEMBER 2022.

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 two phase release.

2. List out any four risk issues.

3. What is rijnmond report?

4. What is safety audit?

5. State thermo calorimetry.

6. Define MIE?

7. Draw any three logic symbols.

8. State HAZAN.

9. What is Gas and vapour?

10. What is the process failure in seveso disaster?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain briefly about what if analysis.

Or

(b) Explain in detail about social benefits vs technological risk.

12. (a) Explain the procedure used to conduct the explosions test.

Or

(b) Write short notes on DSC.

13. (a) Write short notes on modules of heat radiation.

Or

(b) Explain in detail about basic concepts of reliability.

14. (a) Give short hint on chemical inventory analysis.

Or

(b) Explain the logics used in consequence analysis.

15. (a) Write short note on Convey report.

Or

(b) Write short notes on Mexico disaster.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain in details about RSST.

Or

(b) Explain the procedure involved in HAZOP study with guide words.

17. (a) Write short notes on hazard identification method based on properties of chemicals.

Or

(b) Explain the methodology used in risk analysis quantification.

18. (a) Write short notes on Feyzin disaster.

Or

(b) Explain in detail about damage distances on plant layout.

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