C–4850	Sub. Code 91013

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

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 are the five types of fires?
2. Define BLEVE.
3. Why should heat detectors not be used in place of smoke detectors?
4. What is the primary purpose of signal annunciation?
5. Which chemicals are used as a Dry Chemical Powder?
6. Write the principle involved in fire suppression using Halogenated chemicals.
7. Why is Electrical Protection Necessary? What Causes Ignition?
8. Can foam tire extinguishers be used on electrical fires? Justify your answer.
9. What is “intrinsic safety” (I.S.)?
10. What are flammable and combustible liquids?

Part B (5 × 5 = 25)

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

11. (a) Explain the basic goals of fire safety organization Department. And write the objectives of Fire Suppression Division.

Or

(b) Distinguish Fire Triangle to Fire Tetrahydron of fire. And also explain the different modes of heat transfer.

12. (a) Discuss the selection criteria for installation and maintenance of alarm and detection systems.

Or

(b) Describe the classifications for the fire alarm system. Explain the Public Fire alarm system in detail.

13. (a) What is the fire hydrant system? What are the types of fire hydrants and how does it work?

Or

(b) Enlist the jobs to be done during monthly/ quarterly/annual/biannual inspection of fire-fighting equipment.

14. (a) Write the safety measure and design on Electrical Equipment and Installations in Hazardous Areas.

Or

(b) Write the safety measure of loading and unloading of Hazardous chemicals in the process industry.

15. (a) How are hazardous chemicals classified? Give examples for each class.

Or

(b) Write about Hazardous Area classification and how to Control of Ignition Sources.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain the any one case study of fire accident has broken out in the hospital with it root cause. Mention some control measures to prevent the recurrence of fire accidents in the hospitals.

Or

(b) What are the Communications types available in Fire Alarm System? And also explain the ionization type of Fire Detector with neat sketch.

17. (a) Explain in detail about fire extinguisher and their use. Write the types of fire extinguisher with color code and standards.

Or

(b) Explain in detail the working principle and types of sprinkler system used in industry with neat diagram.

18. (a) What are the hazards associated with LPG and Ammonia? Write precautionary measures during storage, handling and transportation of LPG and Ammonia.

Or

(b) How can flammable and combustible liquids to be explosion hazard? Explain flammable or explosive limits.

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C–4851	Sub. Code
	91014

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

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. Name some direct hazards which affect eyes?

2. What are some workplace hazards which affect hearing sense?

3. What are the types of leg injuries?

4. Name some types of head protectors?

5. What are some preventive measures that need to be taken if the toxic chemical has leaked in a process plant?

6. What are some chemical substances which can affect the skin adversely?

7. What are the various contaminants which affect the respiratory system?

8. How do you select breathing apparatus?

9. What are some Personal Protective Equipments (PPE) used when working at height?

10. What are the safety measures to be taken by a factory for the safety of workers?

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

Answer **all** questions.

11. (a) Describe in detail about the various head protective equipment? Explain about emergency measures to prevent head injuries?

Or

(b) Explain about hearing mechanism? What are some protective equipment for protecting ear from excessive noise at workplace?

12. (a) How does one protect hand at workplace? Describe the various types of hand protection?

Or

(b) Explain the potential hazards which may lead to foot and leg injuries. What are some protective measures for legs?

13. (a) Describe in detail about storage and transport of hazardous chemicals at workplace.

Or

(b) Briefly describe about the skin hazards at work place. What measures should be taken to protect the skin?

14. (a) What are the hazards faced by human respiratory system at workplace? Describe in detail about the various contaminants.

Or

(b) How do you select protective equipment for respiratory system? Explain in detail about various protective equipment used at workplace.

15. (a) Describe the hazards and the PPE used for protection under the Health and Safety at Work Act, 1974.

Or

(b) Differentiate between active and passive fall protection systems.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Describe in detail about the health and safety provisions under Factories Act, 1948.

Or

(b) Describe the onsite and offsite emergency plans under MSIHC Rules, 1989.

17. (a) Describe in detail about eye protection, hazards and various PPE for eye protection.

Or

(b) Describe the types of air purifying respirators.

18. (a) Explain in detail about skin Protective Equipment.

Or

(b) Explain in detail about proper color coding of canisters.

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C–4852	Sub. Code 91015

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

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. Define electrical hazards.

2. Write different types of electrical faults.

3. Distinguish between static electricity and static discharge.

4. What are the different classes of insulation?

5. Define Earth Fault Relay (EFR).

6. What is no load protection?

7. Write different types of earthing device.

8. Define discharge rod.

9. What is intrinsically safe electrical equipment?

10. What are the different types of cables?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write short notes on :

(i) Current,

(ii) Voltage,

(iii) Power,

(iv) Resistance

(v) Capacitor.

Or

(b) Explain about international standards on electrical safety.

12. (a) Give short notes on :

(i) Shocks,

(ii) Burns,

(iii) Corona effects,

(iv) Lightning Arrestor.

Or

(b) Explain in detail about over current and short circuit current.

13. (a) Briefly explain about Ground fault circuit interrupter.

Or

(b) Define overload protection. Explain the causes and control measure for the overload protection.

14. (a) Explain detail about permit to work system of electrical maintenance process.

Or

(b) Explain the role of environment in selection of electrical equipment.

15. (a) Briefly explain about explosion proof electrical equipment using different zones.

Or

(b) Give short notes on :

(i) Temperature classification

(ii) Use of Barriers and isolators.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Briefly explain about the Indian Electricity Rules.

Or

(b) Define Short circuit protection. Explain the causes, various devices and their characteristics of short circuit protection.

17. (a) Briefly explain about various categories of personal protective equipment used in electrical work.

Or

(b) Explain in detail about ELCB with neat diagram.

18. (a) Give short notes on :

(i) Safe limit of amperage

(ii) Continuity Test

(iii) Miniature Circuit Breaker

(iv) FRLS insulation.

Or

(b) Explain in detail about various effect of electrical shock on human body.

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C–1876

Sub. Code
91023

B.Sc DEGREE EXAMINATION, NOVEMBER 2021

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 material handling?
2. Write the applications on ergonomics.
3. Write about type of cranes.
4. How unsafe hook contribute the accidents?
5. Define load rating.
6. What is load testing for hoist?
7. What is rigging?
8. How will you calculate centre of gravity of load?
9. Write about performance test of electric truck.
10. Explain the inspection procedure for power elevators.

Part B (5 × 5 = 25)

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

11. (a) Explain the accessories used for manual handling.

Or

(b) Explain storage and handling of cryogenic liquids.

12. (a) Write about an annual infections of wire rope.

Or

(b) Short notes on lifting tools and tackles.

13. (a) Write about conveyor hazards.

Or

(b) Explain hoist limit switch.

14. (a) Explain safe use maintenance of chain slings.

Or

(b) Explain hooks and shackle.

15. (a) Describe tea operating principle of powered industry truck.

Or

(b) Explain the types of drives.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Write about third party inspection.

Or

(b) Explain job hazard analysis with tabulation.

17. (a) Detected notes on conveyor safety.

Or

(b) Explain the requirements, operating principles, training and maintenance of Electric trucks.

18. (a) Write about safety devices and brakes.

Or

(b) How will you calculate about rated capacity wire rope slings?

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C–1877

Sub. Code
91024

B.Sc DEGREE EXAMINATION, NOVEMBER 2021

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. Define the routes of entry.

2. Explain LC50 and LD50

3. What is SDS?

4. What is risk assessment?

5. Define cryogens.

6. Give some examples of oxidizing substances.

7. What is a chemical hazard with example?

8. Write Ts chemical hazards of LPG.

9. What is 5S?

10. How will dispose the chemical waste?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Draw the CLP hazard pictogram?

Or

(b) Explain health surveillance.

12. (a) Write about hierarchy of risk control.

Or

(b) Give the safe transportation procedure for hazardous chemical.

13. (a) Explain water reactive substances.

Or

(b) Write about the design considerations in chemical industries.

14. (a) Explain process hazard analysis.

Or

(b) Explain the emergency preparedness in chemical industries.

15. (a) Explain any two biological hazards.

Or

(b) Describe the classification of waste.

Part C (3 × 10 = 30)

Answer all questions.

16. (a) Explain the content of SDS.

Or

(b) Detail notes on chemical exposure risk assessment.

17. (a) Explain the liability and Relabeling requirements of hazardous chemical.

Or

(b) Explain in detail about the PPE used for chemical workplace.

18. (a) Explain atmospheric monitoring.

Or

(b) Explain acquisition of chemicals.

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C–1878

Sub. Code
91025

B.Sc DEGREE EXAMINATION, NOVEMBER 2021

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. Define Industrial Hygiene.

2. Write about skin and sense organs.

3. Give some examples of blood borne diseases.

4. What is ventilation?

5. What is metabolism?

6. Define occupational exposure limit.

7. Define manual handling.

8. Differentiate while finger and trigger finger.

9. Define biological exposure indices.

10. What is audiometry and its uses.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain respiratory system.

Or

(b) Explain the structure of the body.

12. (a) Write about ionizing and non-ionizing radiation.

Or

(b) Describe the PPE and its types.

13. (a) Explain the stages of toxicological evaluation.

Or

(b) Explain the routes of entry for toxic chemicals.

14. (a) Explain carpal tunnel syndrome.

Or

(b) Write about workplace risk assessment.

15. (a) Explain spirometry with test procedure.

Or

(b) Write about beneficial uses of microorganisms.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain lung function test.

Or

(b) Write short notes on leptospirosis and salmonellosis.

17. (a) Describe in detail about air simplify and analytical methods.

Or

(b) Explain about local exhaust ventilation with its uses.

18. (a) Explain work related upper limb disorder.

Or

(b) Explain circulatory system and fuel supply system of human body.

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C–1879

Sub. Code
91026

B.Sc DEGREE EXAMINATION, NOVEMBER 2021

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 safety sampling.

2. Give the roles and responsibilities of safety officer.

3. Define unsafe act and condition with example.

4. Write the purpose of documentation.

5. Define frequency rate.

6. Write the types of audits in safety.

7. How the safety poster are useful to worker?

8. Define safety policy.

9. Define unsafe act and unsafe condition.

10. What is safety committee?

Part B (5 × 5 = 25)

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

11. (a) Explain briefly about reportable and non-reportable accident?

Or

(b) Write short notes on

(i) Safety survey

(ii) Safety inspection

(iii) Safety sampling.

12. (a) Explain the types audit & its method.

Or

(b) Short notes on safety budgeting.

13. (a) Write the accident investigation steps and its analysis.

Or

(b) What are the procedures followed in reporting accident disabilities?

14. (a) Differentiate the permanent total and permanent partial disabilities.

Or

(b) Explain safety T score.

15. (a) Explain about the training methods.

Or

(b) Give short notes on safety incentive scheme.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain in detail about the recommended practices for compiling and measuring work injury experience.

Or

(b) Illustrate safety poster for Do & Don't in work platform.

17. (a) Write the methods used for implementation of safety audit indication.

Or

(b) Write the following with collection and explain.

(i) Frequency rate

(ii) Severity rate

(iii) Incident rate

18. (a) Define an audit checklist for construction site.

Or

(b) Give detail note on non-conformity reporting.

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C–4853	Sub. Code 91032

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

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 Hazards.

2. List out types of Audit.

3. How does a building Collapse?

4. What is ergonomics?

5. Define NDT.

6. Define severity rate.

7. Define static electricity.

8. Define Benchmarking.

9. What is poor Housekeeping?

10. What is Domestic Safety Training?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain about the cost of accidents and accident reports.

Or

(b) Explain the purpose, procedure and types of safety inspection.

12. (a) Give some examples of unsafe act and unsafe conditions in a Shop floor.

Or

(b) Explain the documents to be examined during a safety audit.

13. (a) Write notes about Industrial Toxicology.

Or

(b) Write about cost of accidents.

14. (a) Distinguish between permanent total disability and temporary total disability.

Or

(b) Explain about manual Handling.

15. (a) Explain about Art of KAIZEN (PDCA).

Or

(b) Briefly explain about the accident reports and records.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain in detail about site layout, planning, design and failure of a building.

Or

(b) Explain the safety responsibilities of safety officers and workers in workplace.

17. (a) Explain in detail about AIR.

Or

(b) State the advantages of good Housekeeping and 5S concepts.

18. (a) Writes notes on five why technique and Ishikawa diagram.

Or

(b) Explain brief about Lifting equipments.

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C–4854	Sub. Code 91033

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

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 Excavation?

2. Define Hoist.

3. Define PPE and Types of PPE.

4. What is shoring in excavation?

5. What is Elevator?

6. What is erection of crane?

7. What is NBC?

8. Define Toe boards.

9. State the Rules to follow in ladder safety.

10. Write about storage of Scaffolding.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain the first aid Legal requirements of BOCW act 1996.

Or

(b) Explain about airborne contaminants.

12. (a) Write about uses of ladder.

Or

(b) Explain excavation and cause of accidents in excavation.

13. (a) Explain confined space and its safety measures.

Or

(b) Explain about road making technique.

14. (a) Explain about tower crane erection, signalling and overloading.

Or

(b) Explain manual handling and its techniques.

15. (a) Explain hot work hazards, its control measures.

Or

(b) Describe the maintenance and inspection procedure of ladder and scaffoldings.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain about PPE and Welfare facilities of BOCW Act 1996.

Or

(b) Explain in detail about handling and transportation of explosives.

17. (a) Explain about cranes, its types, maintenance and inspection.

Or

(b) Explain about forklifts, its types, maintenance and inspection.

18. (a) Explain about excavation safety in detail.

Or

(b) Explain about confined space safety in detail.

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C–4855	Sub. Code 91034

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

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. Define Health and Safety.

2. Define Environment Act, 1986.

3. What are the responsibilities of occupier and safety officer?

4. Define safety data sheet.

5. What are toxic chemicals? With example.

6. Difference between acts and Rules.

7. Mention the preparation of offsite plans.

8. State the list of Hazardous and Toxic chemicals.

9. Define Bio-Medical waste.

10. State the control of water pollution.

Part B (5 × 5 = 25)

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

11. (a) Explain about noise pollution.

Or

(b) State the steps for prevention and control of biomedical waste.

12. (a) Explain the fund, accounts and audit, penalties and procedures of Environmental Act 1986.

Or

(b) Explain about the post-accident report of Hazardous chemicals.

13. (a) Explain about Air Act 1981 and Water Act 1974.

Or

(b) Explain the welfare facilities of factories Act 1948.

14. (a) Explain about batteries management handling rules 2001.

Or

(b) Explain about Workmen Compensation Act.

15. (a) Explain about SMPV.

Or

(b) Explain Health and Safety work Act (HASAWA 1974).

Part C (3 × 10 = 30)

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

16. (a) Explain about Bio-Medical Management and handling rule 1998.

Or

(b) Explain the Import of Hazardous chemical rules, 1989.

17. (a) Explain about chapter 3 Health in factors act 1948.

Or

(b) Explain about BOCW act 1996.

18. (a) Explain QSHAS 18000.

Or

(b) Explain about ANSI.

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C–4856	Sub. Code 91035

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

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 reportable accidents.
2. What is Hazard?
3. Define Birds Triangle.
4. State the Hierarchy of accident control measures.
5. Mention the steps for accident investigations.
6. What is disability?
7. Define Elimination.
8. What do you mean by LTI?
9. What is partial disablement?
10. Define severity.

Part B (5 × 5 = 25)

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

11. (a) Draw the Hierarchy of control triangle.

Or

(b) Write notes on accident reporting to internal management.

12. (a) Explain about engineering controls with examples.

Or

(b) Explain the Biased Liability theory.

13. (a) Explain about reportable and non reportable accidents.

Or

(b) Explain the process of accident investigation.

14. (a) Explain the accident record maintenance in a workplace with evidence.

Or

(b) Brief the classification of accidents.

15. (a) Create a sample accident register with relevant needed information.

Or

(b) Describe about or scheduled charges for disabilities.

Part C (3 × 10 = 30)

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

16. (a) Explain about the Hierarchy of accident control.

Or

(b) Explain the accident reporting as per factories Act 1948.

17. (a) Write notes on methods of accident investigation process.

Or

(b) Explain in detail about disability, its types and severity of disability.

18. (a) Explain in detail about SCAT and STEP method of accident investigation.

Or

(b) Write notes an accident causation theories.

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C–2768	Sub. Code
	91036

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Third Year

Fire and Industrial Safety

ENVIRONMENTAL SAFETY AND HAZARDOUS WASTE MANAGEMENT

(2016 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is meant by NEP?

2. Define environment impact assessment.

3. What is meant by biomedical waste?

4. Define NAAQ.

5. Define Eco labels.

6. What is meant by GOI scheme?

7. What are the characteristics of hazardous waste?

8. Define Electronic waste.

9. What are the environmental effects of vehicular emissions?

10. Define WHO.

Part B (5 × 5 = 25)

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

11. (a) What are the strategies and actions of National Environmental policy?

Or

(b) What are the objectives of National Environmental policy?

12. (a) What are the noise standards for ambient Air quality?

Or

(b) Write a short notes on waste water generation standards.

13. (a) What are the corporate responsibilities for environmental protection?

Or

(b) What are the reasons for International developments in eco labeling?

14. (a) What are the legal provisions in India for electronic waste?

Or

(b) What are the general sanitation procedures for municipal solid waste?

15. (a) Describe the guidelines for manufacturers and users of DG sets.

Or

(b) Explain in detail about PUC test.

Part C (3 × 10 = 30)

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

16. (a) Explain the procedure for environmental clearance.

Or

(b) Explain in detail about Environmental impact assessment.

17. (a) Explain in detail about Environment protection act 1986.

Or

(b) Explain in detail about eco labeling.

18. (a) Explain in detail about the storage and transportation of hazardous waste.

Or

(b) Explain briefly about rain water harvesting.

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C–4857	Sub. Code 91042

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

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 Fundamentals of fire.

2. Mention the types of fires.

3. Define Fire Load.

4. Mention the types of Fire extinguishers.

5. What is Fire hydrant system?

6. What is sprinkler?

7. Mention the teams involved at the time of fire.

8. Illustrate the correct produce, for operating a fire extinguishers.

9. What is partial disablement?

10. Define the Hydrant filling methods.

Part B (5 × 5 = 25)

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

11. (a) Write short notes on classes of fire with examples.

Or

(b) Brief the types of fire extinguishers and its functions.

12. (a) Brief NBC classification based on occupancy.

Or

(b) Explain the safety precaution to be followed at the time of fire.

13. (a) Brief about the fire fighting techniques.

Or

(b) Describe about the sprinkler system installation.

14. (a) Explain about foam suppression system.

Or

(b) Brief about the communication techniques for fire technicians at the time of fife.

15. (a) State the principle and installation of fire pump room.

Or

(b) Describe the basics of electrical and electronics system in fire alarm system.

Part C (3 × 10 = 30)

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

16. (a) Explain in detail about types of fires based on size and manners.

Or

(b) Explain about the types, installation, service and maintenance of fire extinguishers.

17. (a) Write notes an Fire hydrant system.

Or

(b) Explain about fire alarm technology.

18. (a) Explain suppression system based on Co_2.

Or

(b) Explain features of Indian explosive act eight rules.

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C–4858	Sub. Code
	91043

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

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 ventilation?

2. What is HIRA?

3. Define training and name the types of training.

4. Define safety Audit.

5. What is reportable and a non-reportable accidents?

6. What is permanent total disabilities?

7. Define compliance Audit.

8. What is hot work permit?

9. Define ERP.

10. State employer and employee.

Part B (5 × 5 = 25)

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

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

Or

(b) Explain training and its types.

12. (a) Explain HAZOP.

Or

(b) Explain FMEA.

13. (a) Explain of role of supervisor in an incident investigation.

Or

(b) Write short notes on ERP.

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

Or

(b) Explain about the investigation questionnaire.

15. (a) Brief the principle of employer responsibilities.

Or

(b) Brief the principle of contractor employee responsibilities.

Part C

(3 × 10 = 30)

Answer **all** questions.

16. (a) Explain about JSA.

Or

(b) Explain in detail about electrical classifications its designs with codes and standards.

17. (a) Explain PHA.

Or

(b) Explain detail about the whole investigation procedure.

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

Or

(b) Explain about Safety survey and Safety Inspection.

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C–4859	Sub. Code
	91044

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Fourth Semester

Fire 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, Risk.

2. What is 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. What is Third party certification?

9. Define FTA.

10. State “what if ” analysis.

Part B (5 × 5 = 25)

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

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

Or

(b) Explain the fundamental Safety of basic hazard and risk.

12. (a) Brief the description of risk register.

Or

(b) State the comparison of various PHA methods.

13. (a) Explain about the plant aging.

Or

(b) Write notes an Hazard Identification and Evaluation.

14. (a) State the differences between risk management risk assessment and risk analysis.

Or

(b) Describe about FMEA procedure.

15. (a) Write notes an comfortable/flammable gas details.

Or

(b) Explain about the Industrial Hazards.

Part C (3 × 10 = 30)

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

16. (a) Explain ALARP.

Or

(b) Explain the generalized risk ranking methods flow chart.

17. (a) Explain HAZOP methodology.

Or

(b) Explain detail about 3rd party curtained of instruments.

18. (a) Write notes on explosion protection.

Or

(b) Write notes on safety instrumentation system.

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C–4860	Sub. Code
	91045

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

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 safety inspection?
2. State Audit objectives?
3. Define Auditor.
4. What do you mean by follow-up and Monitoring?
5. State Environmental Policy.
6. Mention the rules for ECO Labelling.
7. Define TPI.
8. What is Action plan?
9. What is closing of meeting?
10. State short term action plan.

Part B (5 × 5 = 25)

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

11. (a) Explain the importance and purpose of workplace Inspection.

Or

(b) Explain the benefits of Audit process.

12. (a) Brief the post Audit Activities.

Or

(b) Explain Pre-Audit screening.

13. (a) Explain about, audit needs assessment.

Or

(b) Explain compliance audit.

14. (a) Explain audit documentation and reports.

Or

(b) Companies of ISO 45001 and OSHAS 18001.

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

Or

(b) Explain ONSITE inspection.

Part C (3 × 10 = 30)

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

16. (a) Explain Audit with its types and methodology.

Or

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

17. (a) Explain in detail about workplace hazards and workplace inspection and frequency of inspection.

Or

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

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

Or

(b) Write short notes on code of practice on OSHA Audit.

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C–4861	Sub. Code 91051

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

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. Define Flame proof Equipment.

2. Differentiate: Gas and vapour.

3. List out the examples of emission source.

4. What is NEC?

5. Define: Permissible hot spot temperature.

6. What do you meant by corona discharge associated with electrical equipment?

7. Write about isolation method of hazard control.

8. What is pneumatics?

9. Define: Sparks flashovers.

10. Define intrinsic Safety principle.

Part B (5 × 5 = 25)

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

11. (a) Write about online monitoring expert systems.

Or

(b) Explain in detail about explosion proof equipments.

12. (a) Explain the design regulations for explosion proof equipment.

Or

(b) Give the procedure for classification of hazardous areas.

13. (a) Write about causes and safety hazard of electrical faults.

Or

(b) Explain: Investigation and report of electrical accidents.

14. (a) Explain in detail about hermetic sealing.

Or

(b) Write a shot note on fibre optics.

15. (a) Write about intrinsically safe barrier types.

Or

(b) Write about Intrinsic safety advantages.

Part C (3 × 10 = 30)

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

16. (a) How to determine the degree of emission source? Explain.

Or

(b) Discuss in detail about expert systems for maintenance and troubleshooting.

17. (a) Explain in detail about dust ignition proof enclosure.

Or

(b) Write about the Hazardous area classification and procedure.

18. (a) Write a short note on sand filled installations.

Or

(b) Differentiate: Passive barriers and isolated barriers.

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C–4862	Sub. Code 91052

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

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 is Safety?

2. Write about safety induction training.

3. What is Confirmed Space?

4. Define respiration.

5. What are the hazards of hot work?

6. Define Scaffolding.

7. What is material handling?

8. Define Electricity.

9. Define accident.

10. State fire extinguisher operation method.

Part B (5 × 5 = 25)

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

11. (a) Write about personal pre check in oil and gas industry.

Or

(b) Explain Emergency Response Procedure at oil and gas industry.

12. (a) Explain about signals, displays, safety signs.

Or

(b) Brief: Compressed gas cylinders.

13. (a) Explain JSA, PHA in oil and gas industry.

Or

(b) Explain the categories of human factors accident cause in oil and gas industry.

14. (a) Discuss the recommendation to reduce fatal accidents in oil and gas industry..

Or

(b) Explain about Bohai2 oil accident.

15. (a) Write notes on accident databases in oil and gas industry.

Or

(b) Write a short notes on confined space.

Part C (3 × 10 = 30)

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

16. (a) Write in detail about oil and gas industry and its safety measures.

Or

(b) Explain about occupational stress and human error.

17. (a) Write in detail about HAZOP.

Or

(b) Explain any one offshore industrial accident as case study.

18. (a) Explain about offshore oil and gas rigs accident analysis and failures.

Or

(b) Explain in detail about the Glomar java sea drillship accident.

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C–4863	Sub. Code
	91053

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

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. Define CNC.

2. Define; equipment Layout.

3. What is ventilation?

4. What is LEV?

5. What is manual handling?

6. List out types of slings in material handling.

7. What is conveyor?

8. Define: Team lifting and carrying.

9. Write about types of hoisting apparatus.

10. Write about territorial parameters in plant locations.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain about selection of plant locations.

Or

(b) Discuss the importance of standards and codes of practice for plant and layout.

12. (a) Brief about the location for waste treatment and disposal.

Or

(b) Explain about workstation material handling.

13. (a) Write short notes on facility design, procedure and planning strategies.

Or

(b) Brief about 5S and housekeeping principles.

14. (a) Explain the safe location of chemical storage.

Or

(b) Explain the steps to prevent common injuries in manual material handling.

15. (a) List the inspection and maintenance of lifting equipment's.

Or

(b) Explain about conveyor safety.

Part C (3 × 10 = 30)

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

16. (a) Explain the plant layout and location for pharmaceuticals and food processing industry.

Or

(b) Explain the plant layout and location for nuclear and thermal power stations.

17. (a) Explain the Industrial operations and design of computerized layout and analytical methods.

Or

(b) Write short notes on ergonomic considerations of material handling.

18. (a) Illustrate in detail about ventilation and lighting at workplace.

Or

(b) Explain in detail about mechanical material handling.

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C–4864	Sub. Code 91054

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

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. Define Warehouse.

2. Mention the types of warehouse.

3. What is TREM?

4. State Driver Safety.

5. What is the purpose of forklift in warehouse industry?

6. Define stacking.

7. List out the Safety measure to avoid injuries in manual material handling.

8. List out few lifting equipments.

9. Mention the types of portable fire extinguishers.

10. What is explosion?

Part B (5 × 5 = 25)

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

11. (a) Explain types of Warehouse.

Or

(b) List the Safety measures to be followed in transportation of Hazardous goods.

12. (a) Explain about forklift Safety.

Or

(b) Explain about lifting equipment's Safety.

13. (a) Explain the Motor vehicle transport workers act.

Or

(b) Write short notes about design of tanker lorries.

14. (a) Explain about the Lifting chain defects and its maintenance.

Or

(b) Explain about the storage of compressed gas cylinder.

15. (a) Write note on determination of fire load.

Or

(b) Explain the replacement of Halon with safer substitutes.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain in detail WMS with its need, function, types and strategies.

Or

(b) Explain selection of drivers, their responsibility and driver Safety.

17. (a) Explain about the Transportation of Hazardous goods.

Or

(b) Explain safe practices of warehouse.

18. (a) Write in detail about Fire resistance Building.

Or

(b) Explain about cranes, its types, functions, inspection and maintenance.

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C–4865	Sub. Code
	91055A

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

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 is synthetic fibre?
2. What is the function of flyer frames?
3. Define chemical Safety.
4. Mention the occupational diseases of Textile industry.
5. Define Dying.
6. Define stacking.
7. What is punting?
8. Mention the common Hazards in Textile Industry.
9. Mention the Safety measure in textile Industry.
10. Define Spinning.

Part B (5 × 5 = 25)

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

11. (a) Explain the process Flow Chart in Textile Industry.

Or

(b) Explain the spun and filament yarn to fabric manufacture.

12. (a) Explain the Accident Hazards due to loom shed.

Or

(b) Explain about Mechanical Finishing operations and effluents in Textile Industries.

13. (a) Brief the Health Hazards in textile industry related to noise and its control measures.

Or

(b) Brief about personal protective equipment and welfare measures specific to textile Industries.

14. (a) Explain about special precautions for specific hazardous work environments.

Or

(b) Explain about Factories Act & Rule applicable to textile Industries.

15. (a) Write notes on Effluent treatment and waste disposal in textile industry.

Or

(b) Explain jute spinning and jute fabric manufacture.

Part C (3 × 10 = 30)

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

16. (a) Explain in detail process flow chart in Textile Industries.

Or

(b) Explain in details about Health Hazards in Textile Industries.

17. (a) Write notes on textile Hazards-I.

Or

(b) Write notes on Textile Hazards-II.

18. (a) Explain about the Factory Act and rules for waste disposal in Textile Industries.

Or

(b) Explain fire Hazards in Textile Industries.

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C–4866	Sub. Code
	91055B

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

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. Define dust explosion.

2. What is dust Fire?

3. Define Electroplating.

4. What is MIE?

5. Define evaluation of dust.

6. List few symptoms of dust allergy.

7. State auto ignition.

8. Define thermal sensitivity.

9. Define Mitigation.

10. What is explosion venting?

Part B (5 × 5 = 25)

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

11. (a) Explain the classification of dust (Zone).

Or

(b) Explain dust explosion and types of dust explosion.

12. (a) Write notes an Electro Static Hazards.

Or

(b) Explain the dust handling process.

13. (a) Write notes on role of workers and Safety protections.

Or

(b) Illustrate the evaluation procedures and control measures of particulates.

14. (a) Explain the Flammability test of dust explosion.

Or

(b) Write notes on control of Dust explosion.

15. (a) Mention the control of direct services.

Or

(b) Explain the addition of liquid ESP for dust control.

Part C (3 × 10 = 30)

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

16. (a) Explain in detail about classification of zones (dust) with its parameters.

Or

(b) Explain the electro static hazard its control measures.

17. (a) Explain about the evolution of dust methodologies.

Or

(b) Explain NIOSH guide to the relation of use of particulates.

18. (a) Explain any one dust explosion case study history.

Or

(b) Explain about automatic suppression of dust explosion.

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C–4867	Sub. Code
	91055C

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

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 is risk assessment?

2. Define conveyors

3. Define Fire and explosion

4. What is multi gas detector

5. Define Atmosphere pollution

6. What is guarding of machines?

7. Mention few noise Hazards in mining industry

8. What is primitive system?

9. Define FME

10. Define disaster.

Part B (5 × 5 = 25)

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

11. (a) Write short notes on Handling of explosives.

Or

(b) Explain the cause and prevention of accidents from Heavy machinery and Electrical systems in open cast mines.

12. (a) Explain the prevention and control measures of Fire and explosion in mining industry.

Or

(b) Brief about the Hazards involved in underground mines.

13. (a) Write notes an ventilation and Lighting.

Or

(b) Explain the Hazards of ground collapse.

14. (a) Write short notes on the quantitative structure of Risk Assessment.

Or

(b) Discuss about the reliability and Hazard potential of Risk Assessment.

15. (a) Explain the Safety measures for impressing safety in mines.

Or

(b) Explain the types of injury can occur in mining process.

Part C (3 × 10 = 30)

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

16. (a) Explain about the underground mines.

Or

(b) Explain in detail about the operations of opencast mines.

17. (a) Write notes on Fuzzy model for Risk assessment.

Or

(b) Explain about Tunnelling process.

18. (a) Write notes on disaster management.

Or

(b) Explain in detail about accident analysis and management in mining Industry.

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C–4868	Sub. Code
	91055D

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

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. What is MSIHC?

2. Write any four responsibilities of port authorities?

3. What are the types of cargo ships?

4. Define hazardous cargo.

5. What is the purpose of calculating SWL in hoisting?

6. What is rigging?

7. What is the minimum time period for inspecting containers?

8. Define cargo ships.

9. Draw the explosion pentagon.

10. What are the objectives of dock workers regulations 1990?

Part B (5 × 5 = 25)

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

11. (a) Give short notes on environment protection Act 1989.

Or

(b) What are the responsibilities of dock workers in safety?

12. (a) What are the safe methods for handling hatch beams?

Or

(b) What are the points to be remembered while working with electricity?

13. (a) Write short notes on different types of lifting appliances.

Or

(b) Write short notes on third party testing of lifting appliances.

14. (a) What are the different types of equipment used for transporting containers?

Or

(b) List out the things to be remembered while loading and unloading cargo goods.

15. (a) What are the needed safety precautions for gas leakage?

Or

(b) Illustrate about dock workers rules and regulations.

Part C (3 × 10 = 30)

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

16. (a) Explain in detail about various features of Dock workers act.

Or

(b) Explain in detail about safety in chipping and paining operations on board ships.

17. (a) Explain in detail about testing and examination of lifting appliances.

Or

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

18. (a) How do you certify the dangerous goods containers with proper maintenance procedure?

Or

(b) Prepare an on-site emergency plan and safety report for dock work area.

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