C–1041	Sub. Code
	90312

DIPLOMA EXAMINATION, NOVEMBER 2023

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 combustion?

2. What are sources of heat?

3. Write the advantages of fire alarm system.

4. Write about PASS method.

5. List out types of Sprinkler heads.

6. What is stand pipe and hose system

7. Define UEL.

8. What is LPG and LNG.

9. Give the examples of hot work.

10. What is work permit?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain about physics of combustion.

Or

(b) Explain any one major fire accident in the history.

12. (a) Explain about smoke sensing fire detectors.

Or

(b) Explain about public fire alarm systems.

13. (a) Write about foam extinguishing agents.

Or

(b) Explain about water based sprinkler system.

14. (a) Explain the features of national electric code.

Or

(b) Write about sprinkler system inspections.

15. (a) Write about spray booths.

Or

(b) Explain about safe transportation of hazardous chemicals.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain in detail about remote supervising station fire alarm systems.

Or

(b) Explain about water flow alarms.

17. (a) Explain about national testing laboratory.

Or

(b) Explain about loading and unloading of combustible liquid in a tanker.

18. (a) Explain about the section of Hot Work permit.

Or

(b) Explain in detail about radiant energy sensing fire detectors.

———————

C–1044	Sub. Code
	90321

DIPLOMA EXAMINATION, NOVEMBER 2023

Second Semester

Fire and Industrial Safety

SAFETY IN MATERIAL HANDLING

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. What are the hazards in manual handling?
2. What are the accessories used in manual handling?
3. What is pinch point?
4. What is SWL?
5. Define: conveyor.
6. What is the use of hoist limit switch?
7. Define: Rigging.
8. What is elevator?
9. List the safety precautions in LPG trucks.
10. What are the types of forklift?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain team work lifting and carrying.

Or

(b) Explain the accessories for manual handling.

12. (a) Explain in detail about types of cranes.

Or

(b) Define Third Party Inspection.

13. (a) Explain briefly about load ratings and maintenance of derricks.

Or

(b) Explain in detail highway trucks.

14. (a) Explain different types of rigging.

Or

(b) List the difference between Hooks and Shackles.

15. (a) Explain performance test for industrial trucks.

Or

(b) Explain in detail about boom lift and their advantages.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Describe about the storage and handling of cryogenic liquids.

Or

(b) Write in detail about handling of specific shape objects.

17. (a) Explain in details about conveyor safety.

Or

(b) Explain about safety precaution of crane and reasons for crane accident.

18. (a) Explain in detail about safety precautions and maintenance of gasoline operated trucks.

Or

(b) Explain in detail about Elevator.

———————

C–1045

Sub. Code
90322

DIPLOMA EXAMINATION, NOVEMBER 2023

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 Types of Chemicals?
2. What are the physical form of chemicals?
3. What is LD 50?
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. What is Non Routine Work?
10. What is Acute Conditions with example?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write the contents of MSDS.

Or

(b) Explain about Labeling of Chemicals.

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 PPE used for Chemical Safety.

14. (a) Write about Employee Training.

Or

(b) Explain about PHA.

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

Or

(b) What are the Supervisor responsibilities in Lab Safety.

Part C

$(3 \times 10 = 30)$

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 Emergency Preparedness.

Or

(b) Explain the Hierarchy of control.

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

Or

(b) Explain about GHS.

———————

C–1046	Sub. Code
	90323

DIPLOMA DEGREE EXAMINATION, NOVEMBER 2023

Second Semester

Fire and Industrial Safety

BASICS OF SAFETY MANAGEMENT

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is Safety?
2. What is IRT?
3. Differentiate safety audit and inspection.
4. What is major NCR?
5. Why workers might not report accidents?
6. What is Hazard?
7. Give an example of temporary total disability.
8. Write the formula of PRFR.
9. Define Safety Education.
10. Write about Safety Communication.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write about safety sampling and its importance.

Or

(b) Explain the evolution of modern safety concept.

12. (a) What are the components of safety audit?

Or

(b) Write about perusal of accident and safety records & formats.

13. (a) What are the Roles of Safety Committee?

Or

(b) Write the short notes on Reportable and Non Reportable Accidents.

14. (a) Write about calculations of incident rate and severity rate.

Or

(b) Explain the cost of accidents.

15. (a) Give the importance of safety training.

Or

(b) Write about STM.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain about planning for safety.

Or

(b) Explain the Types of Safety Audit.

17. (a) Explain the Cost of Accidents.

Or

(b) Write about Unsafe Act and Unsafe Conditions of Domino Sequence.

18. (a) Explain the Accident rate and safety 'T' score.

Or

(b) Write about safety budgeting.

———————

C–1047	Sub. Code
	90324

DIPLOMA EXAMINATION, NOVEMBER 2023

Second Semester

Fire and Industrial Safety

ENVIRONMENTAL STUDIES

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Physical Elements of the environment.
2. Cultural Elements of the environment.
3. Producer
4. Decomposer
5. Genetic biodiversity
6. Endemic species
7. Plume
8. Thermal pollution
9. List four common plants of your local area
10. Ecological pyramids

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write notes on definition and scope of environmental studies.

Or

(b) Explain the multidisciplinary nature of environmental studies.

12. (a) Write notes on environmental effects of extracting and using mineral resources.

Or

(b) Illustrate the role of an individual in conservation of natural resources.

13. (a) Write an outline on Biogeographical classification of India.

Or

(b) Write short notes on biodiversity at global, national and local levels.

14. (a) Write notes on simple pond ecosystem of your local area.

Or

(b) Write notes on simple hill slope ecosystem of your local area.

15. (a) Write notes on causes, effects and control measures of air pollution.

Or

(b) Write notes on causes, effects and control measures of noise pollution.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Write an essay on need for public awareness regarding environmental protection.

Or

(b) Write an essay on food resources with special reference to world food problems.

17. (a) Write an essay on various sets of values of biodiversity.

Or

(b) Write an essay on causes, effects and control measures of marine pollution.

18. (a) Write a detailed account on your visit on local polluted site.

Or

(b) Write an essay on your visit to a local area regarding documentation of environmental assets.

———————

C–1048

Sub. Code
90331

DIPLOMA EXAMINATION, NOVEMBER 2023

Third Semester

Fire and Industrial Safety

INDUSTRIAL SAFETY MANAGEMENT AND CONTINUOUS IMPROVEMENT CONCEPTS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What is safety responsibility?
2. Mention the working hours for women workers.
3. How do you store hazardous materials safely?
4. NDT — Discuss Shortly.
5. Define vibration.
6. What is Industrial Toxicology?
7. How to control radiation hazards?
8. Name the portable power tools.
9. Write short notes on POKA YOKE.
10. Role of leadership.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Explain the analysis of accidents and accident reports in detail.

Or

(b) Describe briefly about planning for major emergencies.

12. (a) Briefly discuss about site layout and planning.

Or

(b) Elaborately discuss about fire protection.

13. (a) Briefly discuss about Personal Protective Equipment's.

Or

(b) Explain the welfare facilities with the necessary data.

14. (a) Powered Wheeled Transports – Describe briefly.

Or

(b) Discuss briefly about woodworking machinery and its safety.

15. (a) Explain – The KAIZER Blitz.

Or

(b) Elaborately discuss about The 5 Why's Techniques.

Part C

$(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) Explain in detail about safety Inspections and Audits.

Or

(b) Classify NDT methods and discuss anyone with necessary information.

17. (a) Describe the following :

(i) Heat

(ii) Lighting & Vision.

Or

(b) Briefly discuss about the Slipped Disc Syndrome.

18. (a) Briefly discuss about the Art of KAIZEN (PDCA).

Or

(b) Elaborately discuss about the common-industrial Hazards.

———————

C–1049	Sub. Code
	90332

DIPLOMA EXAMINATION, NOVEMBER 2023

Third Semester

Fire and Industrial Safety

SAFETY IN CONSTRUCTION SECTOR

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** the questions.

1. Define Noise.
2. Write short notes on BOCW Act 1996.
3. How to perform soil tests?
4. What is the purpose of short firing?
5. When are cranes used?
6. Name the lifting tools.
7. What are trestle scaffolds?
8. Mention the critical application of firebrick.
9. Differentiate sitting and standing working positions.
10. What are all the precautions that need to be considered while performing welding?

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

Answer **all** the questions.

11. (a) Briefly discusses about the risk to health at work.

Or

(b) Describe in detail about eye and ear protection.

12. (a) List and briefly discuss the guidelines for firing.

Or

(b) Describe in detail about mucking plant.

13. (a) Explain in detail about safe load indicators.

Or

(b) Identify the purpose of the Backhoe loader and discuss it briefly.

14. (a) Briefly discusses about mixing of concrete materials.

Or

(b) Write short notes on safe use and care of ladders.

15. (a) List the importance and uses of compressed air tools.

Or

(b) Elaborately discuss about liquified petroleum gas storage.

Part C

$(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) Discuss the need and significance of childcare facilities in detail.

Or

(b) What general safety measures need to be considered during drilling and pilling?

17. (a) Explain the road maintenance and traffic management during road construction.

Or

(b) How to handle bamboo materials and rubber goods – discuss briefly.

18. (a) Explain hazards and control measures of grinding in detail.

Or

(b) Briefly discuss about the sanitary facilities.

———————

C–1050	Sub. Code
	90333

DIPLOMA EXAMINATION, NOVEMBER 2023

Third Semester

Fire and Industrial Safety

EHS LAWS AND ACTS

(2019 onwards)

Duration: 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. What is the requirement of special provision regarding Health and Safety at work place?

2. Define Air and Noise pollution.

3. What is NOC? What is the need of NOC from Statutory Authority?

4. Define Audit.

5. Mention two duties of Authorities with respect to Hazardous chemical rules.

6. What is MSDS? Mention four categories.

7. Define the term Wheeling in Electricity rules.

8. Define compressed gas.

9. What is ISO 14000?

10. What is OHSAS 18001 and 45001?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write a note 'Responsibility of Enforcement Agency".

Or

(b) Write Briefly on Tamilnadu safety rules 1950.

12. (a) Write Briefly on Biomedical waste.

Or

(b) Explain in brief on Batteries Rules.

13. (a) Write a note on Responsibilities of Occupier" in terms of Hazardous Chemical Rules 1989.

Or

(b) Explain in detail on MSDS.

14. (a) What are the provisions relating to safety and electricity supply?

Or

(b) What are the Functions of Regional Load Dispatch Centre in Electricity Act?

15. (a) Write a short note on Handling minor leaks and emergencies.

Or

(b) What are the Accidents Involving Personnel Injury while handling gas cylinder?

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Write briefly on Handling and Usage of gas cylinder.

Or

(b) Write briefly on Employment of young persons and working hours.

17. (a) Write briefly on Occupational Safety and Health Act 18000.

Or

(b) Explain in brief on MSDS.

18. (a) Explain briefly on Static and Mobile pressure.

Or

(b) Brief on Hazardous waste management system.

———————

C–1051

Sub. Code
90334

DIPLOMA EXAMINATION, NOVEMBER 2023

Third Semester

Fire and Industrial Safety

ACCIDENT INVESTIGATION, CONTROL, INVESTIGATION AND REPORTING

(2019 onwards)

Duration: 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. Mention the types of accidents.
2. Write the purpose of form no 14.
3. List out the merits of the Shell model.
4. Brief Birds triangle.
5. What is called engineering control?
6. List few duties of a safety officer.
7. Define MTO analysis.
8. Write the scope of the fault tree analysis.
9. Define incident rate.
10. List the types of injuries.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Discuss the accident reporting as per the factory act 1948.

Or

(b) Write short notes on accident record maintenance.

12. (a) Write about domino theory.

Or

(b) Discuss the key points of human factors theory.

13. (a) Describe the Hierarchy of accident prevention and control.

Or

(b) Discuss the importance of administrative control in accident prevention.

14. (a) Write about SCAT in detail.

Or

(b) Discuss the Root cause analysis.

15. (a) Write short notes on Scheduled charges for disabilities.

Or

(b) Differentiate disabling and non-disabling injury.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Elaborate on the process of accident reporting as per the BOCW act 1996.

Or

(b) Discuss the multi causation theory in detail.

17. (a) Discuss the necessity of PPE in accident prevention.

Or

(b) Discuss the Accident analysis and barrier function method in detail.

18. (a) Describe the frequency and severity rates computation method as per 1S3786:1993.

Or

(b) Discuss the Accident proneness theory in detail.

———————

C–1052	Sub. Code
	90341

DIPLOMA EXAMINATION, NOVEMBER 2023

Fourth Semester

Fire and Industrial Safety

FIRE DESIGN ENGINEERING

(2019 onwards)

Duration: 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. Write the classes of fire.
2. What is “Fire load”?
3. Define fire blanket.
4. State the uses of modular fire extinguishers.
5. List out the requirements of ‘Fire pump’.
6. Write the importance of hose rolling training.
7. What do you mean by ‘fire watch’?
8. List out the application of the co2 flooding system.
9. Write the working principle of a smoke detector.
10. Write the purpose of MCP.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write about the terminologies in Fire safety.

Or

(b) Classify the level of fire hazards.

12. (a) Discuss the types of fire extinguishers.

Or

(b) Sketch and explain any one passive fire protection system.

13. (a) Write down the general requirements for the fire hydrant system.

Or

(b) Explain the installation of the fire sprinkler system in detail.

14. (a) Explain the foam suppression system with a neat sketch.

Or

(b) Write short notes on the Fire brigade.

15. (a) Sketch and explain the installation of the hooter.

Or

(b) Discuss the fire alarm design procedures in detail.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Discuss the fundamentals of Fire safety in detail.

Or

(b) Elaborate the fire extinguisher service and maintenance in detail.

17. (a) Explain the fire hydrant installation method with a neat sketch.

Or

(b) Discuss the roles and responsibilities of the fire department in detail.

18. (a) Elaborate the installation of a clean agent suppression system.

Or

(b) Discuss suitable firefighting methods for a construction site.

———————

C–1053	Sub. Code
	90342

DIPLOMA EXAMINATION, NOVEMBER 2023

Fourth Semester

Fire and Industrial Safety

PROCESS SAFETY MANAGEMENT

(2019 onwards)

Duration: 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. What do you mean by energy balances?
2. What is called Hazard?
3. Differentiate FTA and ETA.
4. List few unsafe conditions in the process industries.
5. Write the objective of the safety audit.
6. Define the term equipment deficiencies.
7. List out the investigation methodologies.
8. Mention the importance of employee participation.
9. Why hot work permit is needed?
10. Name few PPE used for process safety.

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

Answer **all** questions.

11. (a) Write about the limits of inventory in detail.

Or

(b) Describe the relief system design in detail.

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

Or

(b) Give a short note on safety training.

13. (a) Explain the concepts of mechanical integrity.

Or

(b) Discuss the prestart Up review in detail.

14. (a) Brief the scope of the incident investigation.

Or

(b) Write about the trade secrets in detail.

15. (a) Discuss the offsite emergency planning in detail.

Or

(b) Discuss the term emergency response.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Sketch arid elaborate the piping and instrumentation diagrams in detail.

Or

(b) Discuss the elements and availability of the operating procedure.

17. (a) Elaborate the management of change in detail.

Or

(b) Describe various investigation questionnaires for process safety.

18. (a) Discuss the principle employer's responsibilities in detail.

Or

(b) Elaborate on chemical process safety in detail.

———————

C–1054	Sub. Code
	90343

DIPLOMA EXAMINATION, NOVEMBER 2023

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. Differentiate hazard and risk.
2. What is a risk matrix?
3. Brief HAZID.
4. Write the objectives of risk management.
5. Mention the limitations of fault tree analysis.
6. Write the steps in PHA.
7. Define risk priority number.
8. Write the benefits of SIL certifications.
9. What is called safety life cycle?
10. List the electrical area classification.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write short notes on ALARP.

Or

(b) Describe the functional safety in detail.

12. (a) Write short notes on Risk assessment.

Or

(b) Write the comparison of various PHA Methods.

13. (a) Differentiate what if and checklist analysis.

Or

(b) Discuss the human reliability analysis.

14. (a) Brief HAZOP methodology.

Or

(b) Discuss the automated FMEA concepts.

15. (a) Discuss the explosion protection methods.

Or

(b) Write short notes on third-party certification.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Describe the fundamentals of safety instrumentation in detail.

Or

(b) Elaborate on the evolution of plant hazards in detail.

17. (a) Discuss the various layer of protection analysis.

Or

(b) Discuss SIL determination techniques in detail.

18. (a) Sketch and explain combustible gas detection methods.

Or

(b) Discuss the operation and maintenance of the safety instrumentation system.

———————

C–1055	Sub. Code
	90344

DIPLOMA EXAMINATION, NOVEMBER 2023

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** the questions.

1. Write the responsibilities of the inspection team.

2. Write the qualification of safety inspector.

3. Define safety audit.

4. Brief the term audit evidence.

5. State the environmental policy.

6. Write the benefits of EIS.

7. List out the key changes in ISO 45001.

8. Write the features of OSHAS 18001.

9. List the audit goals.

10. Why record retention is needed?

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Write about the hazards in the workplace.

Or

(b) Prepare a plan for workplace inspection.

12. (a) List out the background information to be gathered for the safety audit.

Or

(b) Write short notes on post-audit activities.

13. (a) Write the specification of ISO 14004 in detail.

Or

(b) Discuss the rules for eco-labeling.

14. (a) Explain the elements of the OH and S management system.

Or

(b) List the benefits of OSHAS 180001 certification.

15. (a) Discuss the audit documentation procedures in detail.

Or

(b) Discuss the implementation of audit reports in detail.

Part C

($3 \times 10 = 30$)

Answer **all** questions.

16. (a) Elaborate safety inspection follow-up and monitoring methods in detail.

Or

(b) Discuss the methodology to conduct a safety audit in detail.

17. (a) Discuss the general principles of LCA in detail.

Or

(b) Describe the scope and features o ISO 45001 in detail.

18. (a) Enumerate the management system and its strength and weakness assessment in detail.

Or

(b) Describe the IS 14489:1998 code of practice on occupational safety in detail.

———————

C–1056	Sub. Code
	90351

DIPLOMA EXAMINATION, NOVEMBER 2023

Fifth Semester

Fire and Industry Safety

SAFETY IN HIGH HAZARDOUS AREAS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Differentiate class 1 and 2.

2. List the hazardous industrial locations.

3. What is IEC?

4. Write short notes on the continuous degree.

5. Identify the need for pressurized equipment.

6. Define substations

7. Hermatic sealing – explain shortly.

8. What is potting?

9. What are passive barriers?

10. How to identify hazardous locations.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Classify and explain industrial enclosure for various hazardous gases.

Or

(b) Mention and discuss in detail about additional provisions in installations.

12. (a) Describe in detail emission sources and discuss emissions degrees for any source.

Or

(b) Explain the design regulations for explosion-proof equipment.

13. (a) Write short notes on spark flashovers

Or

(b) List the need and significance of nitrogen-filled equipment.

14. (a) List the protection methods in hazardous areas and discuss one in detail.

Or

(b) Write short notes to isolate the hazard.

15. (a) Discuss in detail about hazardous locations.

Or

(b) Explain - Class I, II and III.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Describe in detail about explosion-proof equipment.

Or

(b) Briefly discuss the following

(i) OSHA

(ii) NFA

17. (a) How to identify the faults in electrical equipment and discuss the safety hazard of electrical faults.

Or

(b) Describe in detail about restricted breathing.

18. (a) NFPA Standards – discuss briefly.

Or

(b) Explain in detail about - Intrinsic safety advantages with necessary data.

———————

C–1057	Sub. Code
	90352

DIPLOMA EXAMINATION, NOVEMBER 2023.

Fifth Semester

Fire and Industrial Safety

SAFETY IN OIL AND GAS INDUSTRIES

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** the questions.

1. What is the need for safety in oil industries?

2. List the mechanical injuries.

3. What is operability analysis?

4. Define reliability.

5. Name any two national and international offshore oil industries.

6. Write short notes on the offshore industrial sector risk picture.

7. List the factors which will affect safety in general.

8. How do we reduce accidents in the gas industry?

9. From which source shall we get accident data?

10. Write short notes on lessor learning.

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

Answer **all** the questions.

11. (a) Briefly discuss about product safety organization tasks.

Or

(b) Analyze the common causes of work injuries in gas industries.

12. (a) Describe in detail about Markov method.

Or

(b) Explain in detail about root cause analysis.

13. (a) Elaborately discuss the piper alpha accident.

Or

(b) Analyze the baker drilling barge accident with relevant data.

14. (a) Briefly discuss about accident-related human factors in the industrial sectors.

Or

(b) List the critical safety factors that need to be followed in the oil and gas industries.

15. (a) Elaborately discuss about the good control incident database.

Or

(b) Explain in detail well control incident database.

Part C

$(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) What is the bathtub hazard curve? Briefly discuss with relevant information.

Or

(b) Explain in detail about Failure Mode Effect Analysis.

17. (a) Discuss in detail about offshore worker situation in gas industries.

Or

(b) Explain the following

(i) group factors and

(ii) individual factors

18. (a) Explain in detail about the international association of gas producers.

Or

(b) What general prevention and safety measures need to be followed in the oil and gas industries?

———————

C–1058	Sub. Code
	90353

DIPLOMA EXAMINATION, NOVEMBER 2023.

Fifth Semester

Fire and Industrial Safety

SAFETY ASPECTS IN INDUSTRIAL PLANT LAYOUT DESIGN

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. Define Industrial plant layout

2. What is plant Safety?

3. What are the four basic layout types?

4. What is Eddy current?

5. What is Die penetration test?

6. What are the factors considered while plant layout design procedure?

7. What is the purpose of lighting?

8. Define 5S with an example.

9. Define good house keeping

10. Mention the risk associated with the lifting activities

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain in brief on "safe layout for Pharmaceutical Industry".

Or

(b) Explain in brief on 'safe layout for food processing Industry'

12. (a) Explain NDT testing.

Or

(b) Explain on territorial parameters to be considered during selection of plant locations

13. (a) Write a note on "location for waste disposal and treatment".

Or

(b) Write briefly on CORELAP.

14. (a) Write a short note principles of 5S.

Or

(b) What are the roles of preventive maintenance in Safety and Health?

15. (a) Write a short note on general safety associated with lubrication.

Or

(b) What are the general safety to be considered during handling of ropes and chains?

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain in brief on Operation and maintenance of slewing mechanisms.

Or

(b) Explain in detail on Ventilation standards.

17. (a) Write briefly on Industrial facility systems.

Or

(b) Brief on Plant Inspection.

18. (a) Explain briefly on local and exhaust ventilation system.

Or

(b) Brief on standards and codes of practice for plant and layout.

———————

C–1059	Sub. Code
	90354

DIPLOMA EXAMINATION, NOVEMBER 2023.

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. Differentiate maximum and minimum inventory control systems.

2. List the role of a warehouse manager.

3. Name and illustrate a minimum of two warning symbols.

4. How do you select the drivers?

5. What is grease rack operation?

6. List the applications of electric forks.

7. Define a safe working load.

8. What are wire rope slings?

9. What is a sprinkler system?

10. Write short notes on the fire load.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Elaborately discuss about warehousing strategies.

Or

(b) Describe in detail about the evolution warehousing.

12. (a) Explain in detail about the design of the tanker lorries.

Or

(b) Briefly discuss about motor vehicle transport workers act.

13. (a) Discuss briefly about transport precautions.

Or

(b) Explain employers management in a detailed manner.

14. (a) Discuss in detail about factors of safety.

Or

(b) Discuss in detail about safe handling of materials.

15. (a) Briefly discuss about fire doors.

Or

(b) List the types of portal fire extinguishers and discuss anyone with the necessary data.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Elaborately discuss about logistics management.

Or

(b) What is TREM? Briefly discuss about it.

17. (a) Discuss the safety of manual mechanical handling equipment operations.

Or

(b) Explain materials handling in a detailed manner with relevant data.

18. (a) Explain in detail about the foam pourer system.

Or

(b) What is a fire monitor, and explain it in detail about it?

———————

C–1060	Sub. Code
	90355A

DIPLOMA EXAMINATION, NOVEMBER 2023.

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. Define process flow chart.

2. Identify the uses of warping.

3. List the possible hazards due to steam.

4. What is a loom shed?

5. How many mechanical finishing operations are available?

6. Write short notes on punting.

7. Mention the possible health hazards due to fly.

8. What are all the special precautions to follow in the textile industry?

9. Safety status — discuss shortly.

10. What is the effluent treatment?

Part B (5 × 5 = 25)

Answer **all** the questions

11. (a) Explain in detail about spun and Filament yarn to fabric manufacture.

Or

(b) Elaborately discuss bout rotor spinning.

12. (a) Discuss the possible hazards due to shuttle looms and suggest a suitable solution.

Or

(b) Describe briefly — knitting machines.

13. (a) Briefly discuss about scouring.

Or

(b) What are effluents? Explain in a detailed manner.

14. (a) List the relevant occupational diseases and suggest safety methods.

Or

(b) Explain in detail about health measures specific to the textile industry.

15. (a) Factories act in textile safety – Discuss briefly.

Or

(b) Explain in detail about effluent treatment.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Differentiate short-staple spinning and long-staple spinning.

Or

(b) Discuss briefly the control measures of hazards due to nonwoven's.

17. (a) Explain the following (i) dyeing and (ii) bleaching.

Or

(b) Briefly discuss about health hazards related to noise generated and its control measures.

18. (a) Describe with necessary data – waste disposal in the textile industry.

Or

(b) Write the need and significance of textile industry safety.

———————

C–1063	Sub. Code
	90355D

DIPLOMA EXAMINATION, NOVEMBER 2023

Fifth Semester

Fire and Industrial Safety

SAFETY IN AIRPORT AND SHIPYARD

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** the questions.

1. Write short notes on the dock labour board.

2. Mention the importance of advisory committees.

3. What is hazardous Cargo?

4. List the types of Cargo Ships.

5. Mention the lifting appliances available for construction.

6. How to examine the lifting appliance?

7. Discuss shortly about container side lifter.

8. What are dangerous goods?

9. Identify the prevention methods for gas leakages.

10. Define safety report.

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

Answer **all** the questions.

11. (a) Explain in detail about the environment (protection) act 1989.

Or

(b) Describe – Owner of Ship Master.

12. (a) How to handle the Hatch beams safely? and Discuss briefly.

Or

(b) Discuss briefly about illumination of Decks.

13. (a) Briefly discuss about transtainers.

Or

(b) Write short notes on the use of wire rope chains.

14. (a) Explain the safe use of special lift trucks inside containers.

Or

(b) Discuss the need and significance of certification of containers.

15. (a) Briefly discuss about site emergency plan.

Or

(b) What is dock railways? Explain with necessary information.

Part C

$(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) Elaborately discuss about sixteen responsibilities of different agencies for safety.

Or

(b) List the storage types and briefly discuss about them.

17. (a) Discuss in detail about different types of slings with necessary data.

Or

(b) Elaborately discuss about the restriction of loading and unloading operations.

18. (a) What is an emergency action plan? and Explain in detail about emergency action plans for fire and explosions.

Or

(b) Describe the following :

(i) safety in the airport

(ii) safety in the shipyard.

———————

C–1064

Sub. Code
90361

DIPLOMA EXAMINATION, NOVEMBER 2023

Sixth Semester

Fire and Industrial Safety

SAFETY MANAGEMENT SYSTEM

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. What do you mean by 'Safety'?

2. Brief the term MIS.

3. What is 'Safety Policy'?

4. List out the objectives of Management.

5. State the purpose of Training.

6. Point out few methods to motivate workers.

7. Mention the role of employee in safety.

8. Write down some methods to improve safety.

9. Why the study of behavioural safety is required?

10. Contribution of management is essential to ensure safety. Why?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write short notes on OSHAS and IS 18000.

Or

(b) Brief the near-miss incident with an example.

12. (a) Describe Haddon's principle.

Or

(b) State the responsibilities of Safety Department in brief.

13. (a) Explain various training methods.

Or

(b) Why training for contractors and visitors is also essential?

14. (a) What is the purpose and methods of employee participation in safety?

Or

(b) Brief the role of performance and appraisal in safety development.

15. (a) State the features of Behavioural safety.

Or

(b) Write about ethical issues to prevent accidents.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) How the use of IT tools is useful in managing 'SHE' systems?

Or

(b) Describe the methods to develop accident-free zones.

17. (a) Discuss about the Safety officers role on safety development.

Or

(b) How individual's behaviour affect safety in a work place? Explain.

18. (a) What are the steps to be taken to enhance safety in work places?

Or

(b) How human behaviours help to control accidents?

———————

C–1065	Sub. Code 90362

DIPLOMA EXAMINATION, NOVEMBER 2023.

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. What is 'Hazard'?
2. How hazard analysis helps to improve safety?
3. Brief PHA and HAZOP.
4. What are DSC and TGA?
5. What do you mean by 'Detonation'?
6. List out few soft wares used in risk analysis.
7. State the advantages of Consequence analysis.
8. What the hazards expected in a chemical industry?
9. What is 'Pool fire'?
10. Expand UVCE.

Part B (5 × 5 = 25)

Answer **all the** questions.

11. (a) Explain the Voluntary and Involuntary risks.

Or

(b) Give a methodology for risk monitoring.

12. (a) Write a short note on Thermo Calorimetry.

Or

(b) Brief the Impact Sensitiveness test and Card Gap test.

13. (a) Brief the Event tree analysis with an example.

Or

(b) Write about FEMA and its uniqueness.

14. (a) Explain BLEVE with a sketch.

Or

(b) What is UVCE? Brief.

15. (a) Elaborate the role of consequence analysis in chemical accident minimization.

Or

(b) Explain the Bhopal Incident in detail.

Part C

$(3 \times 10 = 30)$

Answer **all the** questions.

16. (a) How risk monitoring help to enhance safety?

Or

(b) Write about safety warning systems in detail.

17. (a) Explain any two modern equipments used to measure higher temperature.

Or

(b) Describe the basic concepts of Reliability and its features.

18. (a) Elaborate the Logics of consequence analysis.

Or

(b) Write about Convey report, Rijnmond report and Rasmussen reports in short.

———————

C–1066	Sub. Code 90363

DIPLOMA EXAMINATION, NOVEMBER 2023.

Sixth Semester

Fire and Industrial Safety

BEHAVIOUR BASED SAFETY AND INDUSTRIAL ERGONOMICS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all the** questions.

1. List out the types of Personalities.
2. What do you mean by 'Misbehaviour'?
3. How group behaviour affects safety?
4. State the influence of group behaviour in work place.
5. Why Behaviour based safety is required?
6. Point out the functions of Feedback on safety aspects.
7. Define 'Ergonomics'.
8. State the purpose of Ergonomics.
9. Give some personal factors which affect safety.
10. What is 'Fatigue'?

Part B (5 × 5 = 25)

Answer **all the** questions.

11. (a) Write shorts on Learning, its types and learning processes.

Or

(b) How Emotional behaviour affects the working environment?

12. (a) What are the functions of various groups?

Or

(b) Stress the influence of Team building on organization.

13. (a) Describe BBS with an example.

Or

(b) How behaviour based safety improve the usage of PPE?

14. (a) Why Ergonomics is essential?

Or

(b) Discuss various methods to improve Ergonomics for safety.

15. (a) What are job and personal factors affect safety?

Or

(b) Give short notes on Fatigue and Vigilance.

Part C

$(3 \times 10 = 30)$

Answer **all the** questions.

16. (a) Explain the features of behavioural based safety concept and its significances.

Or

(b) Brief Motivation with its importance, types and its effects on work behaviour.

17. (a) How group behaviour helps to improve organisational relationship?

Or

(b) Elaborate the role of Observation and Feedback on safety improvement.

18. (a) Discuss about various Ergonomic activities for safe working environment.

Or

(b) Explain the guidelines for safe design and postures in Man Machine system.

———————

C–1425	Sub. Code
	90311

DIPLOMA EXAMINATION, NOVEMBER 2023

First Semester

Fire and Industrial Safety

BASICS OF FIRE SAFETY

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** the questions.

1. Which of the following substances is most commonly associated with BLEVE incidents?

   (a) Water

   (b) Gasoline

   (c) Propane

   (d) Paper

2. Which stage of a fire is characterized by the peak heat release, a well-established flame, and maximum growth of the fire?

   (a) Incipient stage

   (b) Smoldering stage

   (c) Growth stage

   (d) Fully developed stage

3. Which of the following types of helmets provides protection for the top of the head, the back of the head, and the sides of the head, but not the front?

(a) Hard hats

(b) Bump caps

(c) Climbing helmets

(d) Skull guards

4. Which type of fire extinguisher is appropriate for electrical fires, including those involving live electrical equipment?

(a) Class A fire extinguisher

(b) Class B fire extinguisher

(c) Class C fire extinguisher

(d) Class D fire extinguisher

5. During a routine inspection of a sprinkler system, what is the main purpose of checking the control valves?

(a) To ensure proper water pressure

(b) To inspect for leaks in the system

(c) To check the functionality of the alarm system

(d) To assess the condition of the pipes

6. What type of the protection is specifically designed to protect against cuts, abrasions, and punctures in hazardous work environments?

(a) Kneepads

(b) Steel-toed boots

(c) Leggings

(d) Cut-resistant pants

7. According to NFPA 72, which class of fire alarm system is necessary for properties where the total evacuation time may be longer such as high-rise buildings and large assembly spaces?

(a) Class A

(b) Class B

(c) Class C

(d) Class D

8. The main feature of protective crampons that provides traction on icy surfaces is:

(a) The cushioning material

(b) The number of attachment points

(c) The type of metal spikes or chains

(d) The color of the crampons

9. Oxygen deficiency is typically defined as an atmosphere containing less than what percentage of oxygen?

(a) 21% (b) 15%

(c) 10% (d) 5%

10. According to the National Fire Protection Association (NFPA), what is the flashpoint range for flammable liquids?

(a) Below 100°F (37.8°C)

(b) Between 100°F (37.8°C) and 200°F (93.3°C)

(c) Above 200°F (93.3°C)

(d) There is no specific flashpoint range for flammable liquids

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) What are the stages of fire, and how do they impact fire fighting strategies?

Or

(b) Differentiate between an accident, an incident, and a near miss in terms of workplace safety.

12. (a) Explain the introduction to head protection, highlighting its importance in preventing workplace hazards.

Or

(b) Identify and discuss the various types of goggles used for eye protection.

13. (a) Discuss the emergency measures for hand injuries and the key strategies for their prevention.

Or

(b) Explain the purpose and functioning of a water flow alarm in the sprinkler system.

14. (a) Discuss the different power supply options for fire alarm systems in detail.

Or

(b) Discuss the physical hazards and chemical substances that can affect the skin.

15. (a) Discuss the safety considerations for storing and transporting combustible liquids.

Or

(b) Discuss the key components of respirators in detail.

Part C (5 × 8 = 40)

Answer **all** the questions.

16. (a) Explain the differences between different classes of fire and their respective fire fighting methods.

Or

(b) What are the basic types of personal protective equipment (PPE), and how should they be selected for different work environments?.

17. (a) Explain the types of fire extinguishers, such as Water, CO2, DCP, FOAM, and halogenated agents.

Or

(b) Describe the types and construction of safety helmets, along with their care and maintenance

18. (a) Discuss the essential features of safety shoes and elaborate on their maintenance and care guidelines.

Or

(b) Outline the inspection procedures for a dry pipe sprinkler system, emphasizing the key points to consider for ensuring its optimal performance.

19. (a) Elaborate on the various initiation devices used in fire alarm systems, highlighting their roles in detecting and signaling potential fire hazards.

Or

(b) Explain the importance of promptly removing skin irritants and the use of protective creams in preserving skin integrity in hazardous environments.

20. (a) Elaborate on the differences between air-purifying respirators and self-contained breathing apparatus, and when to select each type.

Or

(b) Explain the precautions and procedures for loading and unloading flammable liquids.

———————

C–1426	Sub. Code
	90312

DIPLOMA EXAMINATION, NOVEMBER 2023

First Semester

Fire and Industrial Safety

OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the questions.

1. Which of the following is an example of a physical occupational hazard?

   (a) Harassment from coworkers

   (b) Exposure to toxic chemicals

   (c) Work-related stress

   (d) Discriminatory practices

2. What type of radiation can be shielded effectively by a thin sheet of aluminum or plastic?

   (a) Gamma radiation

   (b) Alpha radiation

   (c) Beta radiation

   (d) Neutron radiation

3. What type of equipment is commonly used to measure and monitor vibration levels in industrial settings?

(a) Spectrometer

(b) Barometer

(c) Accelerometer

(d) Tachometer

4. What is the unit used to measure the amount of light reaching a surface, often defined as one lumen per square foot?

(a) Kelvin (K)

(b) Candela (cd)

(c) Foot-candle (fc)

(d) Un (lx)

5. What is the first step you should take when encountering an unconscious person?

(a) Cheek for breathing and pulse

(b) Perform CPR immediately

(c) Offer water or food

(d) Cheek for external bleeding

6. What is the term used to describe the front side of the body or an organ?

(a) Anterior

(b) Posterior

(c) Superior

(d) Inferior

7. What is the immediate step one should take upon encountering a potential workplace injury or accident?

   (a) Assess the severity of the injury

   (b) Secure the area and prevent further harm

   (c) Gather witness statements

   (d) Contact the emergency response team

8. What is the first step in assessing a casualty?

   (a) Administering first aid

   (b) Checking for responsiveness

   (c) Calling emergency services

   (d) Evaluating the severity of the injury

9. What is the primary goal of implementing psychological hazard assessments in the workplace?

   (a) To increase employee workload

   (b) To foster a competitive work environment

   (c) To identify and mitigate factors that may cause stress and mental health issues

   (d) To discourage employees from seeking mental health support

10. What is the primary focus of Behavior-Based Safety programs in the workplace?

   (a) Monitoring of employee attendance

   (b) Identifying and addressing unsafe behaviors and actions

   (c) Implementing strict disciplinary measures

   (d) Increasing productivity targets

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Discuss the concept and spectrum of health in the context of occupational and work-related diseases, emphasizing the importance of various levels of disease prevention.

Or

(b) Explain the characteristics of notifiable occupational diseases, and how they can be prevented.

12. (a) Discuss vibration control methods and the effects of whole-body vibration, along with available mitigation strategies.

Or

(b) Describe the purpose and principles of ventilation systems, emphasizing physiological considerations and comfort levels for occupants.

13. (a) What are the key principles of First Aid, and what is the role of the first aider, including the necessary sequence of actions on arrival at the scene?

Or

(b) Provide an overview of diabetes, including the management of hypoglycemia and hyperglycemia in emergency situations.

14. (a) How does the circulatory system work, and what are the necessary steps for handling a heart attack, including chest compression and CPR?

Or

(b) Discuss the management of poisoning cases, including common symptoms and first aid interventions.

15. (a) Discuss Motivational Theory, Job Satisfaction, and the Value System's impact in industrial settings.

Or

(b) How does Drug Abuse and Alcoholism affect workplace dynamics, and what strategies can be employed to address these issues effectively?

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

Answer **all** the questions.

16. (a) Discuss the different types of gas poisoning, such as CO, ammonia, coal, and dust, their potential effects on health, and effective preventive measures.

Or

(b) What are the essential instruments for the detection and measurement of radiation, and how do they contribute to the early recognition of radiation hazards in occupational settings?

17. (a) Explain noise measurement, evaluation and control methods, highlighting the biological effects leading to hearing loss.

Or

(b) Highlight the purpose and advantages of good workplace illumination, including principles, design, and maintenance considerations.

18. (a) Describe the features and management of seizures, including epileptic fits, convulsions and stroke.

Or

(b) Discuss the recognition and management of fainting, including the necessary aftercare procedures.

19. (a) Explain the significance of physical fitness, the proper techniques for lifting, and the appropriate methods for handling causalities, including the use of stretches.

Or

(b) Discuss the types of wounds, their classification and the essential steps for managing bleeding, highlighting the importance of seeking specialist care when necessary.

20. (a) Explain the significance of communication and health education programs in fostering a positive work environment.

Or

(b) Discuss the key elements of Industrial Psychology, emphasizing the significance of Mental Health in Industries and its impact on Organizational Behaviour.

———————