C–5690	Sub. Code
	90324

DIPLOMA EXAMINATION, APRIL 2025

Second Semester

Fire and Industrial Safety

ENVIRONMENTAL STUDIES

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. Define environmental studies.

2. List out any two significant aspects of the environment related to industrial safety.

3. Bring the tribals contribution to forest conservation.

4. Explain the world food problems.

5. Define biodiversity.

6. Name any two Hot spots of biodiversity in India.

7. What are contaminants and give examples?

8. Suggest any two control measures for air pollution.

9. Describe the endangered species.

10. Which instruments are necessary for performing the fieldwork?

Part B (5 × 5 = 25)

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

11. (a) List out any five of the environmental studies' key features.

Or

(b) Write short note on effects of modern agriculture.

12. (a) What is the impact of human activities on land degradation?

Or

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

13. (a) Enumerate the illustrated account of the food web of the ecosystem.

Or

(b) Explain in details about the threats to biodiversity.

14. (a) What are the control measures adopted to minimize soil pollution?

Or

(b) Critically comment on man-wildlife conflict.

15. (a) Discuss the prevention measures which can be adopted for marine pollution.

Or

(b) Write down the measures to be taken during the study of the pond ecosystem.

Part C (3 × 10 = 30)

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

16. (a) Explain why environmental studies are so important in raising awareness urgent now.

Or

(b) Provide an elaborate account on renewable and non-renewable energy sources.

17. (a) Highlight the significance of utilization and conflicts of water resources.

Or

(b) What is meant by Ecological Pyramids and give an illustrated account on the pyramid of numbers, biomass, energy.

18. (a) Describe in detail the steps involved in the conservation of biodiversity.

Or

(b) Clarify the causes, effects and control measures of nuclear hazards.

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C–5692	Sub. Code 90332

DIPLOMA EXAMINATION, APRIL 2025

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. Define about Air born contaminants.

2. Give any two cause of fatal accident.

3. What is meant by trench?

4. Define excavations.

5. What is meant by work over water?

6. Define scaffold.

7. What is the use of safety nets?

8. What is meant by portable electrical tool?

9. Define SWL.

10. What is mean by safe clearance zone?

Part B (5 × 5 = 25)

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

11. (a) Explain human factors associated with accident.

Or

(b) Explain in detail about the PTW systems.

12. (a) Explain safety precaution for installing underground water line.

Or

(b) Explain about pre blasting and post blasting.

13. (a) Write short note on Safe use of ladder.

Or

(b) What are safety precautions to be taken while working on fragile roof?

14. (a) Frame inspection checklist for mobile crane.

Or

(b) Mention the parts used in scaffolding system.

15. (a) What are the things to be checked in pre survey inspection?

Or

(b) Briefly explain about the fire hazards in demolition work.

Part C (3 × 10 = 30)

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

16. (a) Explain about BOCW Act 1996 in brief.

Or

(b) Explain in detail about the blasting, pre blasting and post blasting Inspection.

17. (a) Briefly explain about the safety belts, safety nets and fall arrestors.

Or

(b) Explain about the safety precaution followed in hand and portable electrical Tools.

18. (a) Describe about the safety in earth moving equipments.

Or

(b) As a safety officer what are the safety precautions to be taken during Demolition work.

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C–5698	Sub. Code
	90344

DIPLOMA EXAMINATION, APRIL 2025

Fourth Semester

Fire and Industrial Safety

SAFETY INSPECTION AND AUDIT

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** the questions.

1. What is the role of the inspection team in a workplace inspection?

2. List four key pieces of information that should be included in a workplace inspection report.

3. Briefly explain two different types of safety audits.

4. What are some post-audit activities that need to be carried out?

5. What are the three levels of documentation required for an ISO 14000-based EMS?

6. State two key principles of ISO 14004.

7. Brief the concept of High-Level Structure (HLS)

8. Mention two key changes introduced in ISO 45001 compared to OHSAS 18001.

9. Define the scope of an Occupational Safety and Health Audit.

10. What is the importance of the audit closing meeting in the context of IS 14489:1998?

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

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

11. (a) Illustrate with an example how the findings of a workplace inspection can lead to improvements in safety.

Or

(b) Outline the key steps involved in planning a workplace inspection, highlighting the factors to consider for a successful inspection.

12. (a) How are the strengths and weaknesses of a management system assessed during a safety audit?

Or

(b) Describe the main stages of a safety audit, focusing on the key activities involved in each stage.

13. (a) Describe the different types of eco-labels and their significance.

Or

(b) How does the management review process contribute to continual improvement in an ISO 14001-based EMS?

14. (a) Discuss the guidelines for implementing OHSAS 18001.

Or

(b) What are the key steps involved in developing an OH and S policy?

15. (a) Discuss the importance of implementing the audit report recommendations and the follow-up process.

Or

(b) Outline the process of initiating an OS and H audit according to IS 14489:1998, focusing on the key steps from preparation to conclusion.

Part C $(3 \times 10 = 30)$

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

16. (a) Critically analyse the importance of workplace inspections in preventing accidents and promoting a safe working environment.

Or

(b) Discuss the ethical considerations that auditor need to be aware of when conducting safety audits.

17. (a) Explain the concept of Life Cycle Assessment (LCA) as per ISO 14040. Briefly discuss the different stages involved in conducting an LCA.

Or

(b) Discuss the challenges and benefits associated with ISO 14001 registrations for an organization.

18. (a) Discuss the qualifications and competencies required for an effective OS and H auditor.

Or

(b) Discuss how the company can ensure compliance with the requirements of ISO 45001.

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C–5699

Sub. Code
90351

DIPLOMA EXAMINATION, APRIL 2025

Fifth Semester

Fire and Industrial Safety

SAFETY IN HIGH HAZARDOUS AREA

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. How important is a lockout/tagout procedure in highly hazardous areas?

2. How should electrical hazards be managed in highly hazardous areas?

3. What is the role of signage in highly hazardous areas?

4. How can one reduce the risk of explosions in highly hazardous areas?

5. What is the protocol for reporting accidents in highly hazardous areas?

6. How should workers communicate in highly hazardous areas?

7. What is the significance of emergency exits in highly hazardous areas?

8. What are the responsibilities of a supervisor in a highly hazardous area?

9. How should noise hazards be managed in highly hazardous areas?

10. What are the requirements for respiratory protection in highly hazardous areas?

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

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

11. (a) Explain about the explosion proof equipment.

Or

(b) Explain the enclosures for various hazardous gases and vapours.

12. (a) Explain the procedure for the classification of hazardous areas.

Or

(b) Explain about the industrial zone classification.

13. (a) Describe the oil-immersed equipment.

Or

(b) Explain about the safety hazards in electrical equipment.

14. (a) Describe the intrinsic safety in the hazardous area.

Or

(b) Describe the explosion-proof enclosures

15. (a) Explain the intrinsically safe barriers.

Or

(b) Describe the hazardous location.

Part C $(3 \times 10 = 30)$

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

16. (a) Detailed note on the design features of increased safety equipment.

Or

(b) Explain the online monitoring system in highly hazardous areas.

17. (a) Write a note on the International Electrotechnical Committee.

Or

(b) Explain in detail the structural emission due to failure emission due to gas, vapours, dust, fibres.

18. (a) Give a detailed explanation of faults and hazards in electrical equipment and safety.

Or

(b) Write about the NFPA standards class I, II, III.

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C–5700	Sub. Code
	90352

DIPLOMA EXAMINATION, APRIL 2025

Fifth Semester

Fire and Industrial Safety

SAFETY IN OIL AND GAS INDUSTRIES

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What are the hazards occurs in oil and gas industry?
2. Write the responsibility of safety officer.
3. Define JSA.
4. What is PHA?
5. What is accident data book?
6. Define: confined space.
7. What is midstream?
8. What is an individual factor?
9. Define: Ocean ranger accident.
10. Define: Emergency preparedness.

Part B (5 × 5 = 25)

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

11. (a) Write about bath tub hazard curve.

Or

(b) Explain: Safety Induction training.

12. (a) Write a short note on HAZOP.

Or

(b) Write about confined Markov method.

13. (a) Write short note on situation awareness.

Or

(b) Explain bohai 2 oil accident.

14. (a) Write human factors that affect safety in general.

Or

(b) Briefly explain about group factors.

15. (a) Write short note on Danish energy database.

Or

(b) Explain in detail about collision database.

Part C (3 × 10 = 30)

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

16. (a) Explain accident caution theories.

Or

(b) Explain the failures and lessons learned from landmark offshore oil and gas accidents and corrective measures.

17. (a) Explain in detail about FTA.

Or

(b) Explain offshore accident-related causes.

18. (a) Write in detail about factors contributing to accidents in the oil and gas industry.

Or

(b) Explain onshore and offshore oil and gas industry accident data and analysis.

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C–5701

Sub. Code
90353

DIPLOMA EXAMINATION, APRIL 2025

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: Product layout.
2. Define: Fertilizers.
3. List out the consideration for plant location.
4. Define: NDT Testing.
5. Define: container.
6. Define: JIT.
7. What is checklist?
8. Write the types of lighting.
9. What is lubrication?
10. Define mechanical material handling

Part B (5 × 5 = 25)

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

11. (a) Write briefly about Equipment layout.

Or

(b) Explain the process and advantages in nuclear power station.

12. (a) Explain the safe location for CNG.

Or

(b) Write a note on radiography ultrasonic magnetic particle method.

13. (a) Briefly explain about warehouse operations, function and storage operations.

Or

(b) Write a note on conveyor safety.

14. (a) Explain the purpose of lighting and its advantage.

Or

(b) Write the principles of 5s.

15. (a) Explain the hoisting travelling and slewing mechanisms.

Or

(b) Write briefly about chains and hoops.

Part C (3 × 10 = 30)

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

16. (a) Explain in detail about facilities for safe effluent disposal and treatment tanks.

Or

(b) Briefly explain about safe location for LPG.

17. (a) Explain details about manufacturing operation in JIT and TQM.

Or

(b) Give an overview about ventilation.

18. (a) Write in details about general safety consideration in material handling.

Or

(b) Write the important of plant layout.

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C–5702	Sub. Code 90354

DIPLOMA EXAMINATION, APRIL 2025

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 logistics.
2. What is the purpose of warehouse?
3. Define TERM.
4. What is mean by Driver safety?
5. Write any two transport precaution.
6. Define stacking.
7. What is material handling?
8. Write a load lift of chain sling.
9. What is fire fighting system?
10. What is Fire load?

Part B (5 × 5 = 25)

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

11. (a) Explain about logistics system designs.

Or

(b) Write a note on role of Warehouse manager.

12. (a) Explain about driver training program.

Or

(b) Explain the process of selection of drivers.

13. (a) Explain safety on manual mechanical handling equipment operation.

Or

(b) Write in detail about Gasoline Handling.

14. (a) Explain in details about SWL.

Or

(b) Explain mechanized (kinetic) material handling of EOT crane.

15. (a) Write about fire resistance of building.

Or

(b) Explain carbon- dioxide flooding system.

Part C (3 × 10 = 30)

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

16. (a) Give brief note on Warehouse management system.

Or

(b) Explain parking method of tankers on the highways speed of the vehicle.

17. (a) Explain the driving test drivers responsibility.

Or

(b) Explain in detail about Jib-crane safety precautions.

18. (a) Differentiate between sprinkler system and deluge system.

Or

(b) Briefly explain the process of the installation process of fire extinguishers.

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C–5703	Sub. Code
	90355A

DIPLOMA EXAMINATION, APRIL 2025

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 synthetic fiber.
2. What is long staple spinning?
3. Define Hazard.
4. What is knitting machines?
5. What is dyeing?
6. Write the hazards in bleaching?
7. List out health hazards in textile industry.
8. What is PPE?
9. What is waste disposal?
10. What is effluent?

Part B (5 × 5 = 25)

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

11. (a) Explain the jute spinning and jute fabric manufacturing.

Or

(b) Write the importance of rotor spinning.

12. (a) Write in briefly about Knitting machines.

Or

(b) Briefly explain about loom shed.

13. (a) Write a note on mechanical finishing operation.

Or

(b) Write in briefly about scouring.

14. (a) Discuss briefly about control measures.

Or

(b) Write the health hazards related in textile industry related to dust.

15. (a) Write a note on effluent treatment and Waste disposal.

Or

(b) Write the roles and responsibilities of safety officer.

Part C (3 × 10 = 30)

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

16. (a) Explain in detail about Introduction to Process flow Chart.

Or

(b) Briefly explain about Sizing Process and non-Woven.

17. (a) Give an overview about bleaching.

Or

(b) Explain in detail about PPE used in textile industry.

18. (a) Briefly explain about effluent treatment and waste disposal in textile industry.

Or

(b) Discuss briefly about relevant occupational diseases.

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C–5704	Sub. Code 90355D

DIPLOMA EXAMINATION, APRIL 2025

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 Safety?

2. Who is competent person?

3. What are the types of cargo ships?

4. Define hazardous cargo.

5. Define PPE.

6. What are the types of slings?

7. Define crane.

8. What are the different types of cargo?

9. Define conveyor.

10. Define forklift.

Part B (5 × 5 = 25)

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

11. (a) Write short notes on Dock workers act 1986.

Or

(b) Briefly explain the forums for promoting safety and health in ports.

12. (a) Explain in detail about types of cargo ships.

Or

(b) Write a note on safety in use of transport equipment.

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

Or

(b) Write short notes on testing and examination of lifting appliances.

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

Or

(b) What are the things to be remembered for loading and unloading of cargo?

15. (a) What is the precautions need for gas leakage?

Or

(b) Write a note on dock workers rules and regulations.

Part C (3 × 10 = 30)

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

16. (a) Explain in detail about of Environment protection act 1989.

Or

(b) Explain in detail about safety in chipping and painting 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) Explain in detail about conveyor and forklift safety.

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C–5705

Sub. Code
90361

DIPLOMA EXAMINATION, APRIL 2025

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 are the social considerations for implementing safety management systems?

2. Briefly describe the need for safety management in industries.

3. What is the purpose of formulating a safety policy in an organization?

4. Briefly explain Haddon's Principle in the context of safety planning.

5. What is the purpose of a toolbox talk in safety training?

6. Define 'induction training' in the context of safety, health, and environment education.

7. What is the purpose of employee participation in safety?

8. Define the role of trade unions in Safety, Health, and Environment (SHE).

9. What are human factors that contribute to accidents?

10. Define 'safety culture' in an organization.

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

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

11. (a) Discuss the key components of OSHAS/IS- 18001.

Or

(b) How can economic evaluation methods promote safety in the workplace?

12. (a) Describe the strategic planning process and its importance in safety management.

Or

(b) How can group dynamics influence organisational communication and safety management?

13. (a) Describe the process of assessing safety, health, and environment education training needs.

Or

(b) What strategies can be used to effectively train managers and supervisors in safety practices?

14. (a) Explain the importance of employee participation in safety management.

Or

(b) How can promotional methods be used to enhance safety in the workplace?

15. (a) Explain the role of management in motivating employees towards safety.

Or

(b) How do supervisors contribute to fostering a safety culture within an organization?

Part C $(3 \times 10 = 30)$

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

16. (a) Discuss the history and development of safety management both in India and abroad, highlighting key milestones.

Or

(b) Discuss the nature and scope of employee participation in safety and its impact on workplace safety culture.

17. (a) Discuss the role and structure of the safety department within an organization, including its functions, responsibilities, and authority.

Or

(b) Discuss the impact of organizational behaviour on safety performance, including human factors and psychological aspects.

18. (a) Discuss the design and development of a comprehensive safety training program, including assessment of needs, methods, and evaluation.

Or

(b) Explain the various management principles and practices that can enhance industrial safety.

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C–5706

Sub. Code
90362

DIPLOMA EXAMINATION, APRIL 2025.

Sixth Semester

Fire and Industrial Safety

COMPUTER AIDED HAZARD ANALYSIS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. What is the difference between a hazard and a risk?

2. Define 'individual risk' in the context of hazard assessment.

3. What is the primary application of a Differential Scanning Calorimeter (DSC)?

4. Define the purpose of a Thermo Gravimetric Analyzer (TGA).

5. What is the primary purpose of Fault Tree Analysis (FTA)?

6. Define the Fire Explosion and Toxicity Index (FETI).

7. What is the primary purpose of consequence analysis in risk management?

8. Define BLEVE and its significance in hazard identification.

9. How does past accident analysis contribute to risk assessment techniques?

10. What was the primary cause of the Bhopal disaster?

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

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

11. (a) Explain the concept of 'voluntary and involuntary risk' with examples.

Or

(b) How does Human Error Analysis contribute to hazard assessment?

12. (a) Describe the principles of operation and applications of Thermo Calorimetry.

Or

(b) Outline the methodology and importance of the Impact Sensitiveness Test (BAM).

13. (a) Explain the methodology of Event Tree Analysis (ETA) and its significance in risk assessment.

Or

(b) Outline the key features and uses of CISCON software in risk analysis.

14. (a) Discuss the role of statistical methods in risk assessment and provide an example of their application.

Or

(b) Explain the concept of a Fuzzy Model for Risk Assessment and its advantages over traditional methods.

15. (a) Explain the process of hazard identification based on the properties of chemicals.

Or

(b) Describe the different types of releases (gas/vapour, liquid, two-phase) and their potential impacts.

Part C $(3 \times 10 = 30)$

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

16. (a) Analyze the various approaches for establishing risk acceptance levels, including social benefits versus technological risks.

Or

(b) Analyze the logic and methodology of consequence analysis, including the estimation of source terms and the identification of hazardous processes.

17. (a) Analyze the principles, controlling parameters, applications, and advantages of the Thermo Gravimetric Analyzer (TGA) and Accelerated Rate Calorimeter (ARC).

Or

(b) Evaluate the role of past major industrial accidents (e.g., Bhopal, Seveso, Flixborough) in shaping modern risk assessment techniques, focusing on their contributions to hazard and consequence analysis.

18. (a) Analyze the process and importance of using Fault Tree Analysis (FTA) and Event Tree Analysis (ETA) in quantifying risk, including the use of logic symbols and minimal cut set ranking.

Or

(b) Discuss the role and effectiveness of different hazard assessment methods such as Checklist Analysis, What-If Analysis, and Preliminary Hazard Analysis (PHA).

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C–5707

Sub. Code
90363

DIPLOMA EXAMINATION, APRIL 2025.

Sixth Semester

Fire and Industrial Safety

BEHAVIOUR BASED SAFETY AND INDUSTRIAL ERGONOMICS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is learning?

2. Define motivation.

3. Define communication.

4. What is group dynamics?

5. What is safety culture?

6. Define observation.

7. What is ergonomics?

8. What is work benches?

9. Define job risk factors.

10. What the methods are reducing the posture strain?

Part B (5 × 5 = 25)

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

11. (a) Explain in detail about Learning and Types of Learners.

Or

(b) Write about personality and its types.

12. (a) Explain in detail about group decision making techniques.

Or

(b) Discuss in detail about groups in organizations.

13. (a) Explain in detail about seven lessons from behaviour based safety for increasing PPE use.

Or

(b) Explain about addressing ergonomics hazards through behaviour based observation and feedback.

14. (a) Explain about applications of ergonomic principles in the shop floor.

Or

(b) Explain about seating arrangements in work place.

15. (a) Give some guide lines for safe design and safe postures.

Or

(b) Explain in detail about evaluation and methods of reducing posture strain.

Part C (3 × 10 = 30)

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

16. (a) Explain in details about learning, types of learners, learning process and learning theories.

Or

(b) Explain about:

(i) Group Formation.

(ii) Group Influence.

17. (a) Explain in detail about ABC behaviour modification.

Or

(b) Write about organizational behaviour modification.

18. (a) Explain in detail about Man-Machine interface controls and types of controls.

Or

(b) Discuss in details about measurement characteristics and strategies for enhanced performance.

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