

22408

21819

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.
 - (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

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| 1. Answer any FIVE : | 10 |
| (a) Define safety. | |
| (b) Define safety planning. | |
| (c) Define Safety Integrity Level. (SIL) | |
| (d) Give the purpose of doing accident investigation. | |
| (e) Give the interpretation of 'worker' in factories Act 1948. | |
| (f) Name various hazards in polymer plants. | |
| (g) Name types of maintenance. | |
| 2. Answer any THREE : | 12 |
| (a) Describe the process of safety planning. | |
| (b) Explain Failure Modes and Effect Analysis (FEMA). | |
| (c) Give the steps involved in accident investigation. | |
| (d) Explain events leading to flixborough industrial disaster. | |

- 3. Answer any THREE :** **12**
- (a) Define hazard. Name different types of hazard.
 - (b) Explain preventive maintenance.
 - (c) Explain safety failures which caused Bhopal tragedy.
 - (d) Explain causes of accident.
- 4. Answer any THREE :** **12**
- (a) Explain the steps to build a safety strategic plan.
 - (b) Explain information derived from Hazard Analysis (HAZAN).
 - (c) Give safety measures adopted in fertilizer industry.
 - (d) Explain breakdown maintenance. Give any two disadvantages of it.
 - (e) Explain objectives of safety audit.
- 5. Answer any TWO :** **12**
- (a) Explain safe work place layout in industry.
 - (b) Explain factories Act 1948 with respect to
 - (i) General duties of occupier
 - (ii) Approval, licencing and registration of factories
 - (iii) Duties of the inspector.
 - (c) Describe the sampling technique for petrochemical industry.
- 6. Answer any TWO :** **12**
- (a) Give procedure for doing safety audit. Explain records to be examined during safety audit.
 - (b) Explain functions and responsibilities of maintenance department.
 - (c) Explain on-line maintenance of Rotameter.
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