

22451

23124

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.
 - (8) Use of steam tables, logarithmic, Mollier's chart is permitted.

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| 1. Attempt any FIVE of the following : | 10 |
| (a) Enlist the types of lubricants. | |
| (b) State the types of maintenance in plants. | |
| (c) Give the list of equipment used for electrical maintenance. | |
| (d) Enlist the types of industrial hazards. | |
| (e) State the causes of fire hazards. | |
| (f) Give the types of accidents happened in plants. | |
| (g) State importance of safety audit in brief. | |
| 2. Attempt any THREE of the following : | 12 |
| (a) State need of breakdown maintenance with examples. | |
| (b) Describe any one lubrication system. | |



- (c) Describe mechanical hazard in detail.
 - (d) State important characteristics and chemical reaction of hazardous chemicals.
- 3. Attempt any THREE of the following : 12**
- (a) Describe the tools required for mechanical maintenance.
 - (b) Describe TPM with any two of its important features.
 - (c) Describe any four properties of lubricants.
 - (d) Describe effects and control of accidents happened in plants.
- 4. Attempt any THREE of the following : 12**
- (a) Describe splash lubrication system with neat sketch.
 - (b) Describe any two primary wear processes.
 - (c) Explain any two important safety provisions in Factories Act, 1948.
 - (d) Describe the construction and working of fire extinguishers with neat sketch.
 - (e) Explain Fault Tree Analysis (FTA) in detail.
- 5. Attempt any TWO of the following : 12**
- (a) Prepare Safety Data Sheet (SDS) for (i) Fire hazard (ii) Chemical hazard.
 - (b) Describe following hazard identification methods :
 - (i) HAZOP (ii) HAZAN
 - (c) Describe special fire suppression systems.
- 6. Attempt any TWO of the following : 12**
- (a) Describe features and benefits of Total Productive Maintenance (TPM).
 - (b) Assess the risk associated with use of overhead Cranes and prepare Fault Tree Analysis (FTA).
 - (c) Select tools for mechanical maintenance of shop floor of medium scale manufacturing industry.
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