

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2023****Subject Code:3171507****Date:14-12-2023****Subject Name: Industrial Maintenance and Safety Engineering****Time: 10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Define Reliability and write the basic needs of reliability. **03**
(b) What are the components of maintenance cost? **04**
(c) Explain the possible losses (of cost) in industry if safety is not followed. **07**
- Q.2** (a) What are the causes of industrial accidents? Explain any one in detail. **03**
(b) Enlist and explain different maintenance strategies. **04**
(c) Explain the concept of 'Reliability centred maintenance' in detail. **07**
- OR**
- (c) Explain with neat sketch about fault tree analysis. **07**
- Q.3** (a) What is the importance of lubrication? **03**
(b) Why maintenance record keeping is necessary? **04**
(c) What is 'decision tree'? Explain fault tracing with the help of it or any specified problem. **07**
- OR**
- Q.3** (a) What are the objectives of FMEA? **03**
(b) What is TPM? State its benefits. **04**
(c) What is equipment availability and what are the three basic approaches to define and quantify availability. **07**
- Q.4** (a) Explain breakdown maintenance planning. **03**
(b) List out key features of conditioning monitoring. **04**
(c) Explain the defect due to wear of equipment and its preventions. **07**
- OR**
- Q.4** (a) What is Preventive Maintenance Down Time (PMDT)? **03**
(b) How is the planning and scheduling of maintenance job done? **04**
(c) Discuss briefly: (1) Safety Trials and (2) Industrial Hygiene (3) Alarm and Hazard Defence Plans. **07**
- Q.5** (a) Briefly describe about Hazard and Operability Study (HAZOP). **03**
(b) Explain various methods of recovery and increasing service life of equipment. **04**
(c) How accidents are recorded, reported and investigated? **07**
- OR**
- Q.5** (a) State the benefits of Safety Training. **03**
(b) What is meant by Job Safety Analysis (JSA)? **04**
(c) Explain any two sections of Factories Act, 1948. **07**
