

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VI (NEW) EXAMINATION – WINTER 2023

Subject Code:3161913

Date:07-12-2023

Subject Name:Industrial Safety and Maintenance Engineering

Time:02:30 PM TO 05:00 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.**

| | MARKS |
|---|--------------|
| Q.1 (a) Define the following terms: 1) Quality circle. 2) Reliability. | 03 |
| (b) Explain the different elements to be considered during design stage to improve the maintainability of the system. | 04 |
| (c) Enlist the main reason behind the equipment breakdown and explain it in details. | 07 |
| Q.2 (a) List down the different types of corrosion and state the important factor affecting the corrosion. | 03 |
| (b) Explain the effect of corrosion on the performance of machine. | 04 |
| (c) Explain the reasons for the wear of machine component in details. | 07 |
| OR | |
| (c) Explain the procedure for the assembly of the taper sunk key joints. | 07 |
| Q.3 (a) Draw the various gate symbols used in fault tree analysis (FTA) and state its meaning. | 03 |
| (b) Explain the different ways to reduce the downtime of the equipment. | 04 |
| (c) Explain the FMEA (Failure Mode and Effect Analysis) techniques and state the advantages and limitation of it. | 07 |
| OR | |
| Q.3 (a) Differentiate between offline condition monitoring and online condition monitoring. | 03 |
| (b) Explain the Gantt chart and state its limitation. | 04 |
| (c) Explain the different methods of ferrography in details. | 07 |
| Q.4 (a) Differentiate between planned maintenance and unplanned maintenance. | 03 |
| (b) State the advantages and limitations of condition base maintenance system. | 04 |
| (c) State the main objectives of preventive maintenance and explain the preventive maintenance in details. | 07 |
| OR | |
| Q.4 (a) Define the following terms: 1) Maintenance planning. 2) Maintenance scheduling. | 03 |

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|------------|-----|--|-----------|
| | (b) | Explain the following terms: | 04 |
| | | 1) Major repair. | |
| | | 2) capital repair. | |
| | (c) | Explain the factors involved in the effective planning of maintenance work. | 07 |
| Q.5 | (a) | Differentiate between reportable type accident and non-reportable type accident. | 03 |
| | (b) | Enlist the different causes of industrial accident and explain any two causes in details. | 04 |
| | (c) | Explain the different type of safety training conducted in any organization. | 07 |
| | | OR | |
| Q.5 | (a) | Enlist the requirements of suitable PPE to protect the worker. | 03 |
| | (b) | Explain the main objectives of good plant layout. | 04 |
| | (c) | Enlist the steps of job safety analysis (JSA) and prepare the job safety analysis to perform the “TIG welding on stainless steel parts”. | 07 |
