

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2024****Subject Code:3161913****Date:20-05-2024****Subject Name:Industrial Safety and Maintenance 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.

		MARKS
<b>Q.1</b>	(a) Explain different applications of Gantt and Bar Chart along with its limitations.	<b>03</b>
	(b) Write short note on: Quality Circle in maintenance.	<b>04</b>
	(c) Explain different Safety Measures to prevent accidents and improve productivity.	<b>07</b>
<b>Q.2</b>	(a) What is corrosion? List down different factors influencing corrosion.	<b>03</b>
	(b) Explain Reliability and Failure Rate using Bath Tub Curve.	<b>04</b>
	(c) Explain the assembly of Ball and Roller bearing.	<b>07</b>
<b>OR</b>		
	(c) What is wear? Explain different types of wear with suitable examples.	<b>07</b>
<b>Q.3</b>	(a) Classify different types of failure in detail.	<b>03</b>
	(b) Write short note on Fault Tree Analysis.	<b>04</b>
	(c) Explain Vibration Monitoring for predictive maintenance in detail.	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) Explain Breakdown Maintenance along with its advantages and disadvantages.	<b>03</b>
	(b) Write short note on Design Out Maintenance.	<b>04</b>
	(c) Explain Failure Modes and Effect Analysis in detail. Also list down advantages and disadvantages of the same.	<b>07</b>
<b>Q.4</b>	(a) Write down advantages and limitations of PERT.	<b>03</b>
	(b) Explain different factors involved in effective planning of maintenance work.	<b>04</b>
	(c) What is Job Safety Analysis? Explain its objectives and procedure along with the limitations in detail.	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) What is the significance of Safety Training?	<b>03</b>
	(b) Write down different types and categories of accidents.	<b>04</b>
	(c) Explain different types of Maintenance Plans with suitable examples.	<b>07</b>
<b>Q.5</b>	(a) What are the benefits of JSA?	<b>03</b>
	(b) Explain Off-site Emergency Plan in brief.	<b>04</b>
	(c) Explain different elements for Ensuring Safety in Planning in detail.	<b>07</b>

**OR**

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| <b>Q.5</b> | <b>(a)</b> | Write short note on Factors Influencing the Plant Layout.                          | <b>03</b> |
|            | <b>(b)</b> | Explain Safe Design Procedure in brief.  | <b>04</b> |
|            | <b>(c)</b> | What is Condition Based Maintenance System? Explain Online and Offline Monitoring. | <b>07</b> |

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