

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE- SEMESTER-VI (NEW) EXAMINATION – WINTER 2024**

**Subject Code:3161913**

**Date:28-11-2024**

**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
<b>Q.1</b>	(a) What do you mean by quality? Explain the concept of quality circle.	<b>03</b>
	(b) Explain short term and long term maintenance plans.	<b>04</b>
	(c) Explain the Hazard and Operability Study (HAZOP).	<b>07</b>
<b>Q.2</b>	(a) Classify different types of failure in detail.	<b>03</b>
	(b) Explain Breakdown analysis template by taking an example of any company.	<b>04</b>
	(c) What is FMEA? How does FMEA help maintenance personnel?	<b>07</b>
	<b>OR</b>	
	(c) Explain the causes of wear of equipments and its preventions.	<b>07</b>
<b>Q.3</b>	(a) Define: 1.Opportunistic Maintenance, 2. Routine Maintenance and, 3. Predictive Maintenance	<b>03</b>
	(b) What is Ferrography?	<b>04</b>
	(c) Explain the factors involved in the effective planning of maintenance work.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) Explain Equipment Downtime Analysis	<b>03</b>
	(b) Explain the considerations for “design for maintainability” in details.	<b>04</b>
	(c) Explain the assembly of Ball and Roller bearing.	<b>07</b>
<b>Q.4</b>	(a) Write short note on Design Out Maintenance.	<b>03</b>
	(b) Explain Off-site Emergency Plan in brief.	<b>04</b>
	(c) State the main objectives of preventive maintenance and explain the preventive maintenance in details.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) Define following in terms of maintenance: (1) Planning and, (2) Scheduling.	<b>03</b>
	(b) Explain CPM with its advantages & limitations	<b>04</b>
	(c) Explain the ‘Vibration monitoring’ in detail.	<b>07</b>
<b>Q.5</b>	(a) What are the causes of an accident?	<b>03</b>
	(b) What are the safety rules need to be follow inside your college workshop?	<b>04</b>
	(c) Explain the different type of safety training conducted in any organization.	<b>07</b>
	<b>OR</b>	
<b>Q.5</b>	(a) What is job safety analysis (JSA), Write down its objectives?	<b>03</b>
	(b) Explain the main objectives of good plant layout.	<b>04</b>
	(c) Enlist the personal protective equipments with their functions.	<b>07</b>

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