

Enrollment No./Seat No.:

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**Bachelor of Engineering - SEMESTER - V EXAMINATION - WINTER 2025**

**Subject Code: 3152607**

**Date: 29-11-2025**

**Subject Name: Rubber Product & Process 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.**
- 5. Use a separate blank sheet for drawing the Plant Layout diagram.**

	<b>Marks</b>
<b>Q.1 (a)</b> List the Environmental and Economic Benefits of Waste Management.	<b>03</b>
<b>(b)</b> Explain in detail about the Technology of Hazard Identification.	<b>04</b>
<b>(c)</b> Draw and explain the schematic plant layout diagram for a Rubber Product Manufacturing Unit.	<b>07</b>
<b>Q.2 (a)</b> A rubber goods manufacturer incurs a fixed cost of ₹80,000 for a particular batch. The variable cost per unit is ₹150, and the total production during the period is 8,000 units. Calculate the total cost per unit of production.	<b>03</b>
<b>(b)</b> What do you mean by Safety Science? Which are the key disciplines in safety science? How the safety science applies in the Rubber Industries?	<b>04</b>
<b>(c)</b> Explain about the importance of waste management and write about the Different Ways of Waste Disposal in Rubber Industries.	<b>07</b>
<b>OR</b>	
<b>(c)</b> Write in detail about the Types of Environmental Pollution by Rubber Industries and its impact.	<b>07</b>
<b>Q.3 (a)</b> Explain the Industrial Housekeeping with its main objectives.	<b>03</b>
<b>(b)</b> What are the general elements of sanitation and housekeeping in an industry?	<b>04</b>
<b>(c)</b> Discuss in detail about the Key Sanitation Practices in Rubber Plants.	<b>07</b>
<b>OR</b>	
<b>(a)</b> Explain the Industrial Sanitation with its main objectives.	<b>03</b>
<b>(b)</b> Write in detail about Toxic Hazards of Rubber Chemicals & Their Handling.	<b>04</b>
<b>(c)</b> Write about the Housekeeping Practices Specific to Rubber Industry.	<b>07</b>
<b>Q.4 (a)</b> What is meant by the Right First Time concept in manufacturing?	<b>03</b>
<b>(b)</b> How does Total Quality Management (TQM) enhance customer satisfaction and reduce waste in rubber industries?	<b>04</b>

- (c) Using Break-Even Analysis, evaluate the profitability and production feasibility of manufacturing a rubber bush. Assume suitable values for fixed cost, variable cost, and selling price, and calculate the Break-Even Point with proper justification. 07

**OR**

- (a) Define the term product cost and write its significance in rubber manufacturing. 03
- (b) Explain the difference between job work costing and process costing with suitable examples from rubber product manufacturing. 04
- (c) Explain the Just In Time (JIT) manufacturing concept in detail. Discuss how it can be implemented in a rubber product manufacturing plant. 07

- Q.5** (a) Differentiate between planned and unplanned maintenance. 03
- (b) Why is maintenance planning essential for the safety and reliability of rubber processing machinery? 04
- (c) Describe the functions of a maintenance management system and discuss how it supports plant efficiency. 07

**OR**

- (a) Define plant maintenance and explain its main objectives. 03
- (b) Define Total Productive Maintenance (TPM) and explain its eight pillars. 04
- (c) Discuss the importance and procedure of Preventive maintenance with suitable examples from rubber processing operations. 07

\*\*\*