

Enrolment No./Seat No _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV EXAMINATION – SUMMER 2025

Subject Code:3142603

Date:15-05-2025

Subject Name:Rubber Engineering & its Economics

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
Q.1	(a) Describe the basic components of a rubber mixing mill.	03
	(b) Define and explain “band formation” in rubber milling.	04
	(c) Identify and Explain the Key Safety Measures in Operating a Rubber Mixing Mill.	07
Q.2	(a) Briefly explain the role of the ram in a rubber internal mixer.	03
	(b) Explain the function of the rotor in an internal mixer.	04
	(c) Illustrate the stages of mixing in an internal mixer and explain their significance.	07
	OR	
	(c) Describe the Impact of Different Rubber Compounds on Mixing Efficiency.	07
Q.3	(a) Explain the basic working principle of a rubber extruder.	03
	(b) Differentiate between cold feed and hot feed rubber extruders.	04
	(c) Discuss the Types of Rubber Extruders and Their Applications.	07
	OR	
Q.3	(a) Explain the function of a gearbox in a rubber extruder.	03
	(b) Explain the significance of temperature control in the rubber extrusion process.	04
	(c) Analyze the Design Aspects of Screw Elements in a Rubber Extruder.	07
Q.4	(a) Define rubber calendering. Why is it important in the rubber manufacturing process?	03
	(b) Explain why maintaining consistent temperature is crucial in calendering and how it affects product quality.	04
	(c) Discuss the various components of a rubber calender machine. Explain their functions and the importance of each component in the overall operation of the machine.	07
	OR	
Q.4	(a) List three main applications of rubber calendering in the rubber industry.	03

- (b) Discuss the impact of roll speed and the gap between rolls on the final thickness and uniformity of rubber sheets. **04**
- (c) Discuss the maintenance requirements for a rubber calender machine. What are the common issues faced in its operation, and what preventive maintenance strategies can be adopted to ensure its efficiency? **07**
- Q.5** (a) Define the term mould releasing agent. Excess usage of mould releasing agent is not preferable-why? **03**
- (b) What is the importance of temperature control in rubber injection molding? **04**
- (c) Explain the importance of labor management in the rubber industry, with a focus on the challenges and solutions related to labor shortages and working conditions. **07**
- OR**
- Q.5** (a) Write a brief note on prototype mould. **03**
- (b) Explain the basic process of Rubber Injection Molding. **04**
- (c) Discuss the role of a Rubber Quality Engineer in ensuring compliance with industry standards and regulations. **07**
