

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2024

Subject Code:3152607

Date:12-12-2024

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.

MARKS

- Q.1** (a) Name the chemical responsible for each of the following health hazards :(i) Bladder cancer (ii) Skin cancer (iii) Kidney damage. **03**
- (b) How can we improve the quality of housekeeping? **04**
- (c) What is the risk of poor housekeeping? Explain in detail. **07**
- Q.2** (a) What are the six pillars of Industrial safety? **03**
- (b) Write the effect of crystalline silica on health. **04**
- (c) Write down some important (i).Objectives of Industrial Hygiene? (ii)Principles of Industrial Hygiene? **07**
- OR**
- (c) Describe various components of safety program. **07**
- Q.3** (a) What are the major pollutants of industrial waste? **03**
- (b) What are the health hazards in the rubber industry? Explain in detail. **04**
- (c) Discuss about different types of pollution in rubber Industry. **07**
- OR**
- Q.3** (a) What are the benefits of reducing industrial waste? **03**
- (b) Write the effect of following chemicals on human Health :-(1) Carbon Black (2) Sulphur (3) Peroxide (4) Aromatic Oils. **04**
- (c) Write the damages caused by the pollution on the natural functioning of biosphere. **07**
- Q.4** (a) List the obstacles of an entrepreneur desiring to set up a small industry. **03**
- (b) List the advantages of industrial estates. **04**
- (c) Draw the plant layout diagram for O-ring manufacturing unit. **07**
- OR**
- Q.4** (a) Discuss fundamental criteria for Rubber Engineers. **03**
- (b) Describe the factors that should be taken into account in deciding the location of plant? **04**
- (c) Draw the plant layout diagram for Extruded Rubber Profile Unit. **07**
- Q.5** (a) What is the main objective of cost analysis? **03**
- (b) Describe the features of Rural site location for plant. **04**
- (c) Calculate annual raw material cost for natural rubber O-ring from following data: **07**
Weight of one O-ring -50 g .Total production per year:-15 lac pieces. No. of shifts:
- One. Also suggest mixing equipment. Assume suitable formulation, Cost and other data.

OR

- Q.5** (a) What are the challenges of break-even point?
(b) Write down the importance of plant layout for industries Purpose.
(c) The annual data for ZXC Ltd. is given below.

03
04
07

Sr.No.	Particulars	Amount Rs.
1	Sales 2,00,000 units at Rs. 200/- each	
2	Raw material cost	10,00,000
3	Utility Cost	1,00,000
4	Labour Cost(Daily Wages)	2,00,000
5	Salaries	10,00,000
6	Administrative expenses	2,00,000
7	Rent, Insurance	1,00,000

Calculate variable cost, fixed cost, contribution and breakeven point as percent installed capacity.
