

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV (NEW) EXAMINATION – WINTER 2023

Subject Code:3142601

Date:11-01-2024

Subject Name: Rubber Compounding Materials

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.

- Q.1** (a) Define the terms : (i) Aniline point (ii) Compounding (iii) Pour Point **03**
(b) Give the importance of Rubber Processing oil and write any one in detail. **04**
(c) Discuss in details about the phenomena of Synergism and its importance related to rubber industry. **07**
- Q.2** (a) Write a brief note on Magnesium carbonate. **03**
(b) Mention the special factors consider while selecting an antioxidant system. **04**
(c) Discuss in detail about the Antiozonants. **07**
- OR**
- (c) Explain the auto oxidation of Hydrocarbon Polymers. **07**
- Q.3** (a) “Dinitroso Pentamethylene tetramine widely used as a blowing agent” justify the statement. **03**
(b) Write about the yellow and blue pigments used in rubber industry. **04**
(c) Discuss in detail about the plasticizer and softeners used in rubber industry. **07**
- OR**
- Q.3** (a) Justify the statement “Peptiser will ease the mastication process”. **03**
(b) Write the brief note on Factice. **04**
(c) Discuss in detail about the different types of accelerators used in rubber industry. **07**
- Q.4** (a) Give the importance of Titanium dioxide. **03**
(b) Write a brief note on Ester Plasticizers. **04**
(c) Your company receives an order of 6 Lakh piece of hollow rubber O-ring to be supplied annually to a Car manufacturing company. The weight of a Rubber O-ring is 40 gram. Calculate (i) Specific gravity of compound (ii) Cost of one O-Ring.(iii) Convert PHR to Kg and Prepare the 22kg Batch **07**
- OR**
- Q.4** (a) Write about the Compounds of Aluminum. **03**
(b) Compare the American Process and French process of Zinc oxide. **04**
(c) Draw the flow diagram of manufacturing process of Silica and Explain it in detail. **07**
- Q.5** (a) Write the importance of Rhombic sulphur. **03**
(b) Design a low cost compound formulation for Rubber Bush. **04**
(c) Discuss in detail about the effects of changing particle size and structure on rubber properties. **07**

OR

- Q.5** (a) Mentions the important uses of Sulphur. **03**
- (b) Write about the calculation of compound cost of a recipe, Calculation of compound volume of a recipe, Calculation of compound specific gravity of a recipe **04**
- (c) Explain the “Thermal black process “with flow diagram in detail. **07**
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