

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV • EXAMINATION – WINTER • 2014

Subject Code: 142604

Date: 02-01-2015

Subject Name: Introduction to Rubbers and Rubbery Materials

Time: 02:30 pm - 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.**

- Q. 1** Answer the following. **14**
- (i) Define the term: Polymerization
 - (ii) List the name of compounding ingredients used in rubber industry.
 - (iii) Write the difference between Natural Rubber and Synthetic Natural Rubber.
 - (iv) What do you mean by Mastication?
 - (v) Give the synthesis reaction of Polybutadiene Rubber (PBR).
 - (vi) Draw the structure and write the chemical name of Natural Rubber.
 - (vii) Explain the term: Reclaimed Rubber
- Q. 2** (a) Give a detailed classification of Polymers. **07**
- Q. 2** (b) Discuss the procedure for preparation of Dry Natural Rubber in detail. **07**
- OR**
- (b) Short note on “Epoxidized Natural Rubber” **07**
- Q. 3** (a) Explain the theory of Sulfur Vulcanization with schematic representation. **07**
- (b) Discuss about classification on Fillers used in Rubber industry. **07**
- OR**
- Q. 3** (a) Draw the section showing the features of two-roll open mill and explain the mixing process. **07**
- (b) Short note on Antidegradants. **07**
- Q. 4** (a) Draw the structure of Nitrile Rubber. Explain the influence of Acrylonitrile monomer on properties of Nitrile Rubber. **07**
- (b) Write about the synthesis reaction, chemistry, properties and applications of Styrene Butadiene Rubber (SBR). **07**
- OR**
- Q. 4** (a) List the basic types, properties, applications and synthesis reaction of Chloroprene Rubber. **07**
- (b) Draw the structure of Silicone Rubber and write its advantageous properties. **07**
- Q. 5** (a) Discuss the Rubber elasticity in Shear stress with schematic representation. **07**
- (b) Explain the heat resistance property of rubber. **07**
- OR**
- Q. 5** (a) Describe the stress-strain relationship for compression stress in Rubber. **07**
- (b) Explain about Glass Transition Temperature (T_g) and molecular factors affecting T_g of Rubbers. **07**
