

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V • EXAMINATION – WINTER • 2014

Subject Code: 152605

Date: 08-12-2014

Subject Name: Rubbers: Manufacturing & Its Applications

Time: 10.30 am - 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.

Q. 1 Answer the following. (14)

- (i) What do you mean by Caoutchouc? How it is transferred to Elastomer?
- (ii) Show the schematic representation of different types of Co-polymer structure.
- (iii) Which rubber is known for its excellent weather resistance property? Why?
- (iv) Give the reaction mechanism for Phillips process.
- (v) List the conditions required for Rubber like elasticity in polymers.
- (vi) Explain the phenomena of Blooming for polymers.
- (vii) Mention the catalyst system used for synthesis of Isoprene Rubber (IR).

Q. 2 (a) Make a formulation for Rubber bush of 50 Shore A hardness and find the Compound cost and Sp.gravity of Compound. (07)

Q. 2 (b) Draw the schematic representation showing Emulsion polymerization and explain the process in detail. (07)

OR

(b) Short note on “Initiators”. (07)

Q. 3 (a) Give the comparison between Emulsion SBRs and Solution SBRs. (07)

(b) Write the steps for manufacturing of Silicone Rubber with reaction mechanism. (07)

OR

Q. 3 (a) List the basic vulcanization methods for Butyl Rubber and discuss about any two in detail. (07)

(b) Draw the flow sheet for production of Neoprene and explain it. (07)

Q. 4 (a) Write the basic characteristics of Acrylonitrile monomer and explain its synthesis by Sohio process. (07)

(b) Draw the diagram showing principle of Gel Permeation Chromatography and discuss it for polymers. (07)

OR

Q. 4 (a) Write the basic characteristics of Styrene monomer and explain its synthesis by Oxidation process. (07)

(b) Describe the procedure to determine the molecular mass of polymer by Osmotic pressure method. (07)

-----P.T.O.---

- Q. 5** **(a)** Answer the following.
- (i)** Define the term: Hose **(02)**
- (ii)** Derive the equation for Braiding angle in Hose and write its practical significance. **(05)**
- (b)** List the applications of Rubber in Civil Engineering and Defense Field. **(07)**

OR

- Q. 5** **(a)** Answer the following.
- (i)** How the structure of Radial tyre is different than Bias tyre? **(02)**
- (ii)** Draw the different types of Tread pattern in tyre and write its importance. **(05)**
- (b)** List the applications of Rubber in Medical and Sports field. **(07)**
