Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V • EXAMINATION – SUMMER • 2014

Subject Code: 152605 Date: 24-06-2014

Subject Name: Rubbers: Manufacturing and 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) Define the term "Polymer".
(ii) Give the reaction mechanism for Polybutadiene Rubber.
(iii) Write any two properties and applications of Nitrile Rubber.
(iv) Give the reaction mechanism for synthesis of Isoprene monomer.
(v) List the applications of rubber in Automobile industry.
(vi) Write the basic components of Tire.
(vii) List the different types of Hose.

Q. 2 (a) Short note on Emulsion Polymerization. **(07)**

(b) List the methods for production of Polystyrene monomer and explain the process by anyone with reaction mechanism. **(07)**

OR

(b) Explain the manufacturing process of Butadiene monomer by reaction mechanism. **(07)**

Q. 3 (a) Discuss the production of Styrene Butadiene Rubber by continuous method with flow diagram. **(07)**

(b) Discuss about the properties and applications of Natural Rubber. **(07)**

OR

Q. 3 (a) Draw the flow diagram showing manufacturing process of Butyl rubber and explain the process. **(07)**

(b) Give the different types of cauotchuc. Explain any three. **(07)**

Q. 4 (a) Write the applications of rubber in Civil engineering and Chemical Engineering field. **(07)**

(b) Discuss the general Overview for Conveyor Belt and V Belt. **(07)**

OR

Q. 4 (a) Discuss the applications of Rubber in defense and in medical field. **(07)**

(b) Write about the manufacturing process for Tube. **(07)**

Q. 5 (a) Calculate the compound cost of Microcellular Rubber Sheet and also calculate the specific gravity of this compound. **(07)**

(b) Explain the effect of cross linking on solubility of rubber with graphical representation. **(07)**

OR

Q. 5 (a) Give the Classification of Rubber additives used in rubber compounds and list their general features. **(07)**

(b) Short note on Crystallinity and Orientation. **(07)**

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