

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER– III (New) EXAMINATION – WINTER 2019****Subject Code: 2132602****Date: 03/12/2019****Subject Name: Rubber Technology****Time: 02:30 PM TO 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** (a) Give the natural sources of cellulose and draw the chemical structure of the same. **03**  
(b) Write in brief about Lignin and Coal as natural polymers. **04**  
(c) Explain the seed propagation method for Hevea tree with the help of schematic diagram. **07**
- Q.2** (a) What do you mean by Wet stretching? **03**  
(b) Discuss about axes of orientation. **04**  
(c) Explain the importance of Carbon element in Polymer chemistry. **07**
- OR**
- (c) Explain in detail about the effect of 'impurities remain from the original polymerization reaction' on properties and applications of final polymer. **07**
- Q.3** (a) How Porous structure of Polymers can be obtained by using Solvent? **03**  
(b) Describe the mechanism of sorption of inert sorbates on polymers **04**  
(c) List the methods for manufacturing of Styrene monomer and explain any one with reaction mechanism. **07**
- OR**
- Q.3** (a) How the Porosity can be introduced in polymers by using Porophores? **03**  
(b) Give difference between Sorption and Adsorption. **04**  
(c) List the ways for production of Butadiene monomer and explain any one with reaction mechanism. **07**
- Q.4** (a) Define the term 'Homopolymers' and 'Copolymers' with suitable example. **03**  
(b) Describe linear, branched and cross-linked polymers. **04**  
(c) Explain in detail about Mechanical degradation of polymer. **07**
- OR**
- Q.4** (a) Write about Organic and Inorganic polymers. **03**  
(b) Draw the schematic representation of different types of copolymer structures. **04**  
(c) List the basic mechanism of Polymer degradation. Explain about any one. **07**
- Q.5** (a) Which are the different ways to apply alkyd resins in surface coatings? **03**  
(b) Write the important stages involved in synthesis of Phenolic resins. **04**  
(c) Discuss about the factors influencing the glass transition temperature ( $T_g$ ). **07**
- OR**
- Q.5** (a) Describe the properties and uses of rigid foam. **03**  
(b) Compare Amino resins and Phenolic resins. **04**  
(c) Write a short note on thermal transitions in polymers. **07**

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