

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– III (New) EXAMINATION – WINTER 2019

Subject Code: 3132602

Date: 28/11/2019

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.

		Marks
Q.1	(a) What is the chemical structure of cellulose? Write about the same.	03
	(b) Classify the major groups of protein.	04
	(c) Explain about Humus, Coal and Kerogen as natural polymers.	07
Q.2	(a) List the processes to produce isoprene.	03
	(b) Which are the different sources of ethylene monomer?	04
	(c) Show the reaction mechanism of Reppe Process for the production of butadiene monomer.	07
	OR	
	(c) Explain the process to produce Chloroprene from butadiene with the help of reaction mechanism.	07
Q.3	(a) Relate the orientation and crystallization.	03
	(b) Classify the various ways of stretching to achieve orientation. Describe about any two.	04
	(c) Explain the importance of carbon in polymer chemistry.	07
	OR	
Q.3	(a) What is the difference between mono and biaxial orientation?	03
	(b) Compare the effect of orientation on tensile strength and elongation properties.	04
	(c) Summarize the effect of different impurities on properties of polymer.	07
Q.4	(a) Discuss about the structure of irregular atactic.	03
	(b) What is the role of antioxidants in polymer composition?	04
	(c) Compare the types of polymer degradation.	07
	OR	
Q.4	(a) Discuss about the structure of stereoregular isotactic.	03
	(b) List any two examples of antioxidants with their structure.	04
	(c) Explain the reaction mechanism of polymer degradation involving substituent group.	07
Q.5	(a) What is the difference between adsorption and adsorption?	03
	(b) Explain any two methods by which porous structure can be formed in polymers.	04
	(c) Discuss the determinants of polymer crystallinity.	07
	OR	
Q.5	(a) Define the terms: (i) Sorption (ii) Sorbent (iii) Sorbate	03
	(b) Explain in brief about the mechanism of sorption of inert sorbates on polymers.	04
	(c) Discuss about the effect of crystallinity on the properties of polymers.	07
