Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III (New) EXAMINATION – WINTER 2015

Subject Code:2132602 **Date:23/12/2015**

Subject Name: Rubber Technology

Time: 2:30pm to 5:00pm **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) Write the importance of Inner cortex region for Hevea Brasiliensis tree.**
- **(ii) How shellac is obtained?**
- **(iii) Give the difference between Block co-polymer and Graft co-polymer.**
- **(iv) Which type of Orientation occur when polymer process through Injection molding?**
- **(v) Define the term: Thermosetting resins**
- **(vi) Write the characteristics of C-F bond.**
- **(vii) Draw the structure of Isoprene monomer.**
- **(viii) Write the principal applications of Amber as a natural polymer.**
- **(ix) Give the difference between Syndiotactic and Atactic configuration of polymers.**
- **(x) List the basic types of mechanism by which polymer degradation occurred.**
- **(xi) For which polymer the Glass Transition temperature (Tg) is heighest from following:**
  - **(a) methyl Acrylate (b) butyle Acrylate (c) ethyl Acrylate**
- **(xii) Write the relation between Permeability and Crystallinity for polymers.**
- **(xiii) What do you mean by Sorbate?**
- **(xiv) Why Biocides are required in polymer compounding?**

Q. 2 (a) Define the term: Porosity.List the parameters for estimation of Porosity of a sorbent. (03)

(b) Write about any two methods for formation of Porous structure of polymers. (04)

(c) List the various methods of vegetative propagation for Hevea Brasiliensis tree and explain any one in detail. (07)

OR

(c) Write a detailed note on Tapping system for Hevea Brasiliensis tree. (07)

……P.T.O……

Q. 3	**(a)**	**Draw the schematic diagram showing blown bubble technique for orientation of film.**	**(03)**
	(b)	**Write the name and draw their structures showing geometrical isomerism for Polyisoprene rubber.**	**(04)**
	(c)	**Write the characteristics of Acrylonitrile monomer (ACN). Explain its synthesis by giving reaction mechanism.**	**(07)**

OR

Q. 3	**(a)**	**How Orientation affects on Optical properties of Polymer?**	**(03)**
	(b)	**Write a brief note on importance of Glass Transition temperature (Tg).**	**(04)**
	(c)	**List the methods for production of Chloroprene monomer. Explain any one with reaction mechanism.**	**(07)**
Q. 4	**(a)**	**Write about advantages and disadvantages of Amino resins over Phenolics.**	**(03)**
	(b)	**Write the function of following in polymer compounding:** **(i) Antistatics (ii) Stabilizers**	**(04)**
	(c)	**Describe the Oxidative degradation of polymers in detail with necessary reactions.**	**(07)**

OR

Q. 4	**(a)**	**Give reaction mechanism for formation of methylol phenol for production of Phenolic resins.**	**(03)**
	(b)	**Write the importance of following in polymer chemistry:** **(i) C=O bond (ii) C=C bond**	**(04)**
	(c)	**Short note on Mechanical degradation.**	**(07)**
Q. 5	**(a)**	**Write the sequence of steps for synthesis of Polypeptide.**	**(03)**
	(b)	**Explain the process for regeneration of Cellulose.**	**(04)**
	(c)	**Discuss about Polymer morphology with the help of schematic representation showing thermal transitions in polymers.**	**(07)**

OR

Q. 5	**(a)**	**Write about molecular chemistry and importance of Starch as a natural polymer.**	**(03)**
	(b)	**Give the major classification of Protein with examples.**	**(04)**
	(c)	**Discuss in detail about determinants of polymer crystallinity.**	**(07)**

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