Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V EXAMINATION – WINTER 2015

Subject Code: 152605 Date:14/12/2015

Subject Name: Rubbers: Manufacturing & its Applications

Time: 10:30am to 1:00pm 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 chemical name of Natural rubber and draw its structure.**	
	(ii)	**Give reaction mechanism for synthesis of Chloroprene monomer.**	
	(iii)	**List any four applications of rubber in medical industry.**	
	(iv)	**Define the term: Polymer**	
	(v)	**Give reaction mechanism for production of Butyl rubber.**	
	(vi)	**Write any two important characteristics of Silicon rubber.**	
	(vii)	**List the different types of Co-polymers.**	
Q. 2	**(a)**	**List the basic mechanisms for Emulsion Polymerization and explain any one in detail.**	**(07)**
Q. 2	**(b)**	**Discuss the general Overview for Cellular rubber Products.**	**(07)**
		OR	
	(b)	**Make a formulation and calculate the compound cost and specific gravity for Microcellular Rubber Sheet.**	**(07)**
Q. 3	**(a)**	**Draw the schematic diagram for production of Styrene Butadiene Rubber (SBR) by Continous process and explain it in detail.**	**(07)**
	(b)	**Discuss about influence of ACN content on chemistry and properties of Acrylonitrile Butadiene Rubber (NBR).**	**(07)**
		OR	
Q. 3	**(a)**	**Give synthesis reaction for production of Neoprene rubber and explain the manufacturing process.**	**(07)**
	(b)	**Draw the manufacturing flow chart for synthesis of Polybutadiene rubber and explain it in detail.**	**(07)**
Q. 4	**(a)**	**Explain the dehydrogenation method for synthesis of Styrene monomer with reaction mechanism.**	**(07)**
	(b)	**Write the applications of Ethylene and Propylene monomers in rubber industry and write about their manufacturing.**	**(07)**
		OR	
Q. 4	**(a)**	**Short note on Ammoxidation process.**	**(07)**
	(b)	**List the basic processes for production of Butadiene monomer and explain any one in detail.**	**(07)**

Q. 5	**(a)**	**List the applications of Rubber in the field of Chemical engineering and mechanical engineering.**	**(07)**
	(b)	**Describe in detail about various types of Hose, its structure and importance.**	**(07)**

OR

Q. 5	**(a)**	**List the applications of Rubber in Sports field and Defense.**	**(07)**
	(b)	**Give the Overview for Tyre and write about its structure and tread pattern in detail.**	**(07)**

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