Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV(New) • EXAMINATION – WINTER 2016

Subject Code:2142602 **Date:23/11/2016**

Subject Name:Natural Rubber Science & 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		**Answer the following.**	**14**
	1	Write the function of partitioning agents for powdered rubber.	
	2	Define the term : Buckling	
	3	Write the equation showing relation between Young's Modulus and Shear Modulus.	
	4	What is Epoxidized Natural Rubber (ENR)?	
	5	Give the chemical name of Natural Rubber.	
	6	What do you mean by Diffusion process?	
	7	Give any two uses of Reclaimed Rubber.	
	8	Define the term: Liquid Rubber.	
	9	Write any one disadvantage of Blooming process.	
	10	List any one Non- Rubber Substance present in Natural Rubber with its function.	
	11	Give the schematic representation of Graft Co-polymer.	
	12	What do you mean by low temperature crystallization?	
	13	Write any two advantages of Technically Specified Rubbers (TSR).	
	14	What is Alternate Co-polymer?	
Q.2	**(a)**	Why Natural Rubber requires chemical modification? Give reason.	**03**
	(b)	Write about SMR L grade of Natural Rubber.	**04**
	(c)	Short note on Ribbed Smoke Sheet (RSS).	**07**
		OR	
	(c)	Discuss in detail about properties and applications of Natural Rubber.	**07**
Q.3	**(a)**	What do you mean by Induction period?	**03**
	(b)	Explain in brief about "Crystal growth" phase during low temperature crystallization in Natural Rubber.	**04**
	(c)	Discuss the general features and affecting factors for Wax Blooming Phenomena in Rubber.	**07**
		OR	
Q.3	**(a)**	Write in brief about "Nucleation" stage during low temperature crystallization process.	**03**
	(b)	Explain the effect of low temperature crystallization process on properties of Rubber.	**04**
	(c)	List the parameters which affect the rate of Diffusion process. Explain any	**07**

two in detail.

Q.4	**(a)**	Write about the effects of Sea water on Natural Rubber properties.	**03**
	(b)	How the Puncture test is carried out? Write about the process with suitable diagram.	**04**
	(c)	Describe in detail about the mixing process for powdered rubber.	**07**

OR

Q.4	**(a)**	Give a basic classification of fillers.	**03**
	(b)	Write in brief about theory on transmissibility of rubber components.	**04**
	(c)	Discuss about advantages of Powdered and Particulate rubber technology.	**07**
Q.5	**(a)**	Write in brief about the preparation of Liquid telechelic polymer.	**03**
	(b)	Why Natural Rubber is very reactive polymer? Give Reasons.	**04**
	(c)	Describe the Reclaimator process for manufacturing of reclaimed rubber.	**07**

OR

Q.5	**(a)**	Give the basic classification of Liquid rubber.	**03**
	(b)	Mention the properties of Epoxidized Natural Rubber (ENR) as a Raw Rubber.	**04**
	(c)	Discuss the properties of Reclaim Rubber as a compounding ingredient.	**07**

****