Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III • EXAMINATION – WINTER • 2014

Subject Code: 2132601 Date: 20-12-2014

Subject Name: Basic Rubber Science

Time: 02.30 pm - 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)**	Discuss the structure property relations in rubber.	**07**
Q.1	**(b)**	Answer the following	
	i	Write down the general rules for polymer solubility.	**04**
	ii	Explain the term cohesive energy density with respect to polymer solution.	**03**
Q.2	**(a)**	List the various purification methods available for colloids. Explain any two.	**07**
Q.2	**(b)**	Answer the following	
	i	Write in brief about various modes of heat transfer.	**04**
	ii	Explain the concept of functionality with suitable example.	**03**
		OR	
Q.2	**(b)**	Answer the following	
	i	Explain the theory of diffusion in elastomer.	**05**
	ii	Give the examples of M-class rubber with their structure.	**02**
Q.3	**(a)**	Give an importance of density determination in rubber. Describe the method for determining relative density of zinc oxide powder and also list the sources of errors.	**05**
Q.3	**(b)**	Answer the following	
	i	Explain the laws of regular reflection and refraction respectively with appropriate figure.	**05**
	ii	Explain the given terms: (i) Shape Factor (ii) Elastic Collision	**04**
		OR	
Q.3	**(a)**	Explain effect of compounding variables on transmissibility of rubber compound.	**05**
Q.3	**(b)**	Answer the following	
	i	Write a short note on refractive index of polymers.	**05**
	ii	List out the types of friction. Explain any one.	**04**
Q.4	**(a)**	What do you mean by chain growth polymerization? Give its types based on its mechanism. Explain any one in detail.	**07**
Q.4	**(b)**	Answer the following	
	i	Write down advantages and disadvantages of solution polymerization technique.	**04**
	ii	What do you mean by inhibitor? Explain the function of inhibitor.	**03**
		OR	
Q.4	**(a)**	Discuss the step growth polymerization with suitable example.	**07**
Q.4	**(b)**	Discuss the salient features of suspension polymerization.	**07**

Q.5	**(a)**	Describe the classification of solution based on the size of dispersed particle.	**06**
Q.5	**(b)**	Answer the following	
	i	Explain given terms: (i) Crystalloids (ii) Colloids	**04**
	ii	Write down the characteristics of colloidal state.	**04**
		OR	
Q.5	**(a)**	Differentiate the lyophilic sols and lyophobic sols.	**07**
Q.5	**(b)**	Answer the following	
	i	Describe the classification of colloids based on nature of dispersed state.	**05**
	ii	What do you mean by tyndall effect?	**02**

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