GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–III (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2132601   **Date: 02/06/2017**

Subject Name: Basic Rubber Science

Time: 10:30 AM to 01:00 PM   **Total Marks: 70**

Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Draw figures wherever necessary**

Q.1	Answer the following	**14**
1.	What do you mean by saturated rubber?	
2.	Write down the formula to calculate the bulk modulus with respect to rubber.	
3.	Define the term 'Co-efficient of Rolling Friction'.	
4.	Write down the practical significance of shape factor.	
5.	What do you mean by segmental motion?	
6.	Classify the polymer according to it's origin.	
7.	Give two examples of rubber which come under category of olefins.	
8.	Write down the major function of inhibitor.	
9.	Define the term 'micelle'.	
10.	List out any two electrical properties of polymer.	
11.	What do you mean by sol?	
12.	List out the modes of heat transfer.	
13.	Write down the unit of thermal conductivity.	
14.	Give any one example of diffusion process with respect to rubber.	

Q.2	**(a)**	Write a note on translational motion.	**03**
Q.2	**(b)**	Write down the general rules for polymer solubility.	**04**
Q.2	**(c)**	Discuss in detail about the necessary conditions for rubber like elasticity in polymer.	**07**

OR

Q.2	**(c)**	Discuss in detail about the characteristic properties of rubber.	**07**

Q.3	**(a)**	Give the laws of floatation.	**03**
Q.3	**(b)**	Define the term 'surface tension'. Derive the formula to calculate the surface tension with respect to rubber.	**04**
Q.3	**(c)**	Discuss in detail about refractive index of polymers.	**07**

OR

Q.3	**(a)**	Write down the main sources of error in density measurement of rubber.	**03**
Q.3	**(b)**	Summarize the experimental laws of friction.	**04**
Q.3	**(c)**	Discuss the characteristic features of sinusoidal vibrations.	**07**

Q.4	**(a)**	Write down the functionality of given compounds:(i) CH_3COOH (ii)$OHCH_2CH_2OH$ (iii)$C_6H_5NH_2$	**03**
Q.4	**(b)**	Differentiate the chain growth polymerization and step growth polymerization	**04**
Q.4	**(c)**	Discuss in detail about the free radical polymerization.	**07**

OR

Q.4	**(a)**	Write in brief about the classification of polymer according to its applications.	**03**
Q.4	**(b)**	Differentiate the low molecular weight compound and polymer.	**04**

Q.4 **(c)** Discuss in detail about the polycondensation polymerization. **07**

Q.5 **(a)** Give the characteristics of liophilic sol. **03**
Q.5 **(b)** How purification of colloids is carried out by ultrafiltration? **04**
Q.5 **(c)** Discuss in detail about the types of solution. **07**

OR

Q.5 **(a)** Give the characteristics of liophobic sol. **03**
Q.5 **(b)** Explain the Tyndall Effect. **04**
Q.5 **(c)** Discuss in detail about the types of colloidal system. **07**

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