GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– III (New) EXAMINATION – WINTER 2019

Subject Code: 2132601   **Date: 30/11/2019**
Subject Name: Basic Rubber Science
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	**(a)**	What are the differences between density and relative density?	**03**
	(b)	How can you obtain relative density of a substance which floats in water?	**04**
	(c)	Discuss the conditions which are necessary for rubber like elasticity in polymer.	**07**
Q.2	**(a)**	Describe the term 'Functionality' with suitable example.	**03**
	(b)	Write down the general rules for polymer solubility.	**04**
	(c)	Explain in detail about the Bulk Polymerization.	**07**
		OR	
	(c)	Discuss the salient features of solution polymerization technique.	**07**
Q.3	**(a)**	Write about the brownian movement exhibited by colloidal solution.	**03**
	(b)	Differentiate the multi molecular colloids and macromolecular colloids.	**04**
	(c)	Explain the dialysis method for purification of colloidal solution in detail.	**07**
		OR	
Q.3	**(a)**	Write in brief about Emulsions.	**03**
	(b)	What do you mean by 'Tyndall Effect'? Also give its cause.	**04**
	(c)	Differentiate the lyophilic sols and lyophobic sols.	**07**
Q.4	**(a)**	What do you mean by coefficient of friction? List the factors affecting coefficient of friction with respect to rubber?	**03**
	(b)	Differentiate the terms 'vibrations' and 'waves'.	**04**
	(c)	Explain in detail about refractive index of polymers.	**07**
		OR	
Q.4	**(a)**	Define the terms: (i) Reflection (ii) Refraction (iii) Critical angle	**03**
	(b)	Discuss about the effect of fillers and processing oils on transmissibility.	**04**
	(c)	Write a short note on Pigment.	**07**
Q.5	**(a)**	Describe the term 'thermal conductivity' with its unit.	**03**
	(b)	Give different modes of heat transfer.	**04**
	(c)	Explain in detail about the Fick's law of diffusion.	**07**
		OR	
Q.5	**(a)**	State the Fourier's law of heat conduction. And represent it mathematically.	**03**
	(b)	Write about the terms: absorptivity, reflectivity and transmissivity.	**04**
	(c)	Explain in detail about mass and molar concentrations with ideal gas mixture theory.	**07**

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