Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III (NEW) EXAMINATION – SUMMER 2019

Subject Code: 2132601 **Date: 07/06/2019**

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)**	Write about Archimedes Principle.	**03**
	(b)	How can you obtain relative density of a substance which floats in water?	**04**
	(c)	Discuss in detail about ‘Young’s modulus’ and ‘Shear Modulus’.	**07**
Q.2	**(a)**	Write about the R class and Q class of rubbers with example.	**03**
	(b)	Give the general rules for polymer solubility.	**04**
	(c)	Explain in detail about the characteristics properties of rubber.	**07**
		OR	
	(c)	Write a short note on ‘Suspension polymerization technique’.	**07**
Q.3	**(a)**	Define the terms: (i) Reflection (ii) Refraction (iii) Critical angle	**03**
	(b)	Differentiate ‘vibrations’ and ‘waves’.	**04**
	(c)	Explain in detail about refractive index of polymers.	**07**
		OR	
Q.3	**(a)**	Mention the purpose of using pigment in rubber industries. Classify the types of it.	**03**
	(b)	Discuss about the effect of fillers and processing oils on transmissibility.	**04**
	(c)	Explain in detail about electromagnetic radiation and its properties.	**07**
Q.4	**(a)**	State the Fourier’s law of heat conduction. And represent it mathematically.	**03**
	(b)	Write about the different modes of heat transfer.	**04**
	(c)	Explain in detail about mass and molar concentrations with ideal gas mixture theory.	**07**
		OR	
Q.4	**(a)**	What do you mean by thermal conductivity? Write its unit.	**03**
	(b)	Write about the terms: absorptivity, reflectivity and transmissivity.	**04**
	(c)	Explain in detail about the Fick’s law of diffusion.	**07**
Q.5	**(a)**	Write about multimolecular colloids and macromolecular colloids.	**03**
	(b)	Give any four applications of colloids.	**04**
	(c)	Explain the dialysis method for purification of colloidal solution in detail.	**07**
		OR	
Q.5	**(a)**	Write about the brownian movement exhibited by colloidal solution.	**03**
	(b)	What do you mean by Gel? Give importance of it.	**04**
	(c)	Discuss in detail about the comparison of lyophilic sols and lyophobic sols.	**07**

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