

GUJARAT TECHNOLOGICAL UNIVERSITY**BE SEM-III Examination May 2012****Subject code: 132601****Subject Name: Basic Rubber Science****Date: 11/05/2012****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)** Explain the types of colloidal systems. **07**
- Q.1 (b)** Answer the following
- i.** Write a short note on bulk modulus. **03**
- ii** Give the characteristics of electromagnetic radiation. **04**
- Q.2 (a)** Explain the term surface tension. Derive its expression by following capillary method. **07**
- Q.2 (b)** Answer the following
- i.** Explain the structure property relationship in rubber. **04**
- ii.** Write in brief about the three modes of heat transfer. **03**
- OR**
- Q.2 (b)** Discuss the necessary conditions for rubber like elasticity in polymer. **07**
- Q.3 (a)** Answer the following
- i.** Define the following terms: (i) Static Friction (ii) Rolling Friction **03**
(iii) Kinetic Friction
- ii.** Diffusion and solubility of compounding ingredients in rubber are of great practical interest-explain this statement with suitable example. **04**
- Q.3 (b)** Write a short note on electrical properties of rubber. **07**
- OR**
- Q.3 (a)** Explain the various methods of density determination for various types of substances including powders and liquids. **07**
- Q.3 (b)** Write a short note on refractive index of polymer. **07**
- Q.4 (a)** Explain the termination reaction of free radical polymerization **06**
- Q.4 (b)** Answer the following
- i.** Differentiate the chain polymerization and step polymerization. **04**
- ii.** Write a short note on initiator. **04**
- OR**
- Q.4 (a)** Discuss in detail about the suspension polymerization with its merits and demerits. **06**
- Q.4 (b)** Answer the following

	i. Define the following terms: (i) Inhibitor (ii) Surfactant (iii) Micelle (iv) Critical Micelle Concentration	04
	ii. Explain the terms organic polymer and inorganic polymer respectively with suitable examples and their structures.	04
Q.5	(a) Discuss the dialysis method for purification of colloids.	08
Q.5	(b) Answer the following	
	i. What do you mean by Tyndall Effect? Explain the causes of Tyndall Effect with help of figure.	04
	ii. Give the difference between the crystalloids and colloids.	02
	OR	
Q.5	(a) Discuss in detail about the applications of colloids.	07
Q.5	(b) Differentiate the lyophilic sol and lyophobic sol.	07
