

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 (iii) Kinetic Friction **03**
 - 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**
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