

**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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