

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**
