

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-III (OLD) EXAMINATION – WINTER 2017****Subject Code:132601****Date:17/11/2017****Subject Name: Basic Rubber Science****Time: 10:30 AM to 01:00 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** Answer the following. **(14)**

- (i) What do you mean by Degree of Polymerisation?
- (ii) Define the terms: 'Bulk modulus' and 'Shear modulus'.
- (iii) List the effects associated with friction.
- (iv) State the Fick's Law of mass transfer.
- (v) What is the relation between critical angle and refractive index of any medium?
- (vi) Define the terms: 'Lyophilic sols' and 'Lyophobic sols'.
- (vii) State the Laws of Floatation.

**Q. 2** (a) Write a short note on Suspension polymerization. **(07)****Q. 2** (b) Discuss the conditions for rubber like elasticity in the polymers. **(07)****OR**(b) Write a short note on Structure-property relations in rubbers. **(07)****Q. 3** (a) Describe the methods to determine relative density of various types of substances including powders and liquid. **(07)**(b) Write a short note on refractive index of polymer. **(07)****OR**

- Q. 3** (a) Explain the term surface tension. How the surface tension is measured by Leconte du Tensiometer? **(07)**
- (b) What do you mean by friction? Discuss about the various types of it. **(07)**
- Q. 4** (a) Write about the electrical properties of Polymers. **(07)**
- (b) Discuss the Zeroth Law of Thermodynamics. Also write about Triple point cell. **(07)**

**OR**

- Q. 4** (a) Write in detail about the effect of compounding on transmissibility.
- (b) Describe the different modes of heat transfer. And write about Convective mode of heat transfer. **(07)**
- Q. 5** (a) Discuss in detail about the applications of colloids. **(07)**
- (b) List the different methods available to prepare colloidal solution. Discuss any two in detail. **(07)**

**OR**

- Q. 5** (a) Discuss the types of colloidal systems with examples. **(07)**
- (b) Write a short note on Emulsion. **(07)**