

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III • EXAMINATION – SUMMER 2013****Subject Code: 132601****Date: 31-05-2013****Subject Name: Basic Rubber Science****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)** Differentiate the lyophilic sols and lyophobic sols. **07**
- Q.1 (b)** Answer the following
- i** Give the classification of rubbers with respect to their main chain backbone and structure respectively. **05**
- ii** What do you mean by degree of polymerization? **02**
- Q.2 (a)** Discuss the conditions which are necessary for rubber like elasticity in polymers. **07**
- Q.2 (b)** Explain the term surface tension. Derive the formula to calculate the surface tension by capillary method. **07**
- OR**
- Q.2 (b)** Answer the following
- i** Why nitrile rubber shows superior oil resistance among all dienes? **04**
- ii** Which different types of motions are observed in rubber? **03**
- Q.3 (a)** State the experimental laws of friction. Give the modification to these laws for applications to rubber. **06**
- Q.3 (b)** Answer the following
- i** Write a brief note on bulk modulus and elastic collision respectively. **04**
- ii** Define the following terms: (i) Vibrations (ii) Waves (iii) Diffusion (iv) Conduction **04**
- OR**
- Q.3 (a)** Describe the phenomenon of vibration isolation by taking an example of rubber mountings. **06**
- Q.3 (b)** Answer the following
- i** Explain the phenomenon of total internal reflection, constructive and destructive interference and polarization. Find the velocity of light in glass if the refractive index of glass is 1.5 **05**
- ii** State the principle laws of floatation. **03**
- Q.4 (a)** Discuss the salient features of bulk polymerization. **07**
- Q.4 (b)** Answer the following
- i** Write a short note on initiators. **05**
- ii** Define the following terms: (i) Polymer (ii) Polymerization **02**

OR

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Q.4	(a)	Discuss the salient features of suspension polymerization.	07
Q.4	(b)	Answer the following	
	i	Write a short note on inhibitors.	04
	ii	Explain the concept of functionality with suitable examples.	03
Q.5	(a)	List the different methods available to prepare colloidal solution. Discuss any two in detail.	07
Q.5	(b)	Answer the following	
	i	Write a short note on types of solutions.	05
	ii	Define the following terms: (i) Crystalloids (ii) Colloids	02
OR			
Q.5	(a)	List the different purification methods available for colloidal solutions. Discuss any two in detail.	07
Q.5	(b)	Answer the following	
	i	Explain the characteristics of colloidal state.	04
	ii	What do you mean by multimolecular colloids? Also give their examples.	03
