

GUJARAT TECHNOLOGICAL UNIVERSITY
B.E. Sem-III(Rubber Technology)Examination December 2009

Subject code: 132602

Date: 19 / 12/ 2009

Subject Name: Rubber Technology

Time: 11.00 am – 1.30 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 ‘Amoxidation’ reaction? Write its stoichimetry, conditions and catalysts.
 - (ii) Write the properties of Phenolic Resins.
 - (iii) Proteins are classified in which groups? Discuss the difference between them.
 - (iv) Explain about C-N bond and N-H bond.
 - (v) Discuss about Cold Stretching.
 - (vi) What do you mean by Glass Transition temperature? Write its importance.
 - (vii) What do you mean by Sorption, Sorbent and Sorbate?
- Q.2** (a) Discuss the sketch for the structure of the Hevea brasiliensis seed and its mode of germination. **07**
- (b) Discuss in detail about Mechanical Degradation of polymer with examples. **07**
- OR**
- (b) Explain in detail about Degradation of polymer by high Energy Radiation. **07**
- Q.3** (a) Answer the following. **08**
- (i) Discuss the relation between Orientation and Crystallization.
 - (ii) How the Electrical and Optical properties are affected due to the orientation of molecules in polymer? Discuss in detail.
- (b) List out the Monomeric additives used in Polymer Compounding.. **06**
Write in detail about any two of them.
- OR**
- Q.3** (a) Explain in detail about the Orientation of polymer molecules during other process techniques with figure. **06**
- (b) Write the general relationship between Chemical Composition and Polymer properties. **08**
- Q.4** (a) Which synthetic rubber can be produced by use of Isoprene monomer? List out the different methods for the production of Isoprene monomer. Write in detail about any two. **08**
- (b) Short note on Mechanism of Sorption of Inert Sorbates on polymer. **06**

OR

- Q.4 (a)** Which are the industrial processes for the production of Vinyl Acetate monomer? Discuss any one in detail. **07**
- (b)** List out the different methods for forming porous structure of polymer. Write detail about any three. **07**
- Q.5 (a)** Write principal types of Natural Rubber (NR) with their name, isoprene structure and uses. **05**
- (b)** Short note on Thermal Transitions in polymers. **05**
- (c)** Write the properties and applications of Epoxy Resins. **04**
- OR**
- Q.5 (a)** Short note on Tall Oil- Derived polymers. **06**
- (b)** Discuss the Interchain and Interchain forces present in polymer molecules. **04**
- (c)** Write about Silicone Resins. **04**
