

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- Vth SEMESTER-EXAMINATION – MAY/JUNE - 2012****Subject code: 152605****Date: 07/06/2012****Subject Name: Rubbers: Manufacturing & its Applications****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) Answer the following. 06**
1. Write the structure of SBR
 2. List the properties which improve with increasing ACN content in NBR
 3. Why Sulphur is not used as a vulcanizing agent for Chloroprene Rubber (CR)?
- (b) Explain the Chemistry of Silicone Rubber. 08**
- Q.2 (a) Write the applications of rubber in Automobile engineering & Chemical Engineering field. 07**
- (b) Discuss the general Overview for Cellular rubber Products. 07**
- OR**
- (b) Discuss the general Overview for Tyre. 07**
- Q.3 (a) Answer the following.**
- (i) Discuss in detail about the properties of Raw Natural Rubber. **06**
 - (ii) Write in brief about the factors affecting heat resistance of rubber. **04**
- (b) How is relative molecular mass determined by end group analysis method? 04**
- OR**
- Q.3 (a) Answer the following.**
- (i) Explain the curing system of IIR in detail. **06**
 - (ii) Explain the temperature dependence of elastic moduli of Caoutchouc, Elastomer and Duromer. **04**
- (b) Explain the term “Gel Rubber” with its classification. 04**
- Q.4 Answer the following.**
- (a) Give the Classification of Rubber additives used in rubber compounds and list their general features. 07**
- (b) Explain the Free-radical mechanism steps by giving reactions. 07**
- OR**
- Q.4 (a) Write about Isoprene monomer & its importance in polymer field and explain the method of production in detail. 07**
- (b) Short note on Emulsion Polymerisation. 07**
- Q.5 (a) Explain the Solubility parameter with respect to Polymer Solution 07**
- (b) “Rubber is a versatile material.” Justify the statement in terms of its applications in general. 07**
- OR**
- Q.5 (a) Explain the ultracentrifuge method to determine the relative molecular mass 07**
- (b) Calculate the compound cost of Microcellular Rubber Sheet and also calculate the specific gravity of this compound. 07**
