

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- VIth SEMESTER–EXAMINATION – MAY- 2012****Subject code: 162602****Date: 11/05/2012****Subject Name: Synthetic Rubbers****Time: 10:30 am – 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) List the basic types of Thiokol rubber. Give the difference between them.
- (ii) Draw the structure of hypalon rubber. How rubbery behavior can be achieved?
- (iii) List the name of monomers used in the fluoroelastomer with their structures.
- (iv) Explain the chemistry and characteristics of ethylene vinyl acetate rubber (EVA) in short.
- (v) Write the synthesis reaction of polynorbornene rubber. Name the polymerization method used.
- (vi) Write the basic advantages of Carboxylated Rubbers.
- (vii) Write the chemical name of three types of epichlorohydrin rubbers. How they differ from each other? Explain in brief.

Q. 2 (a) Discuss the chemistry of nitrile rubber and explain the influence of monomer ratio on properties of NBR. **07****Q. 2 (b)** List the types of Isoprene rubber according to method of production. Explain manufacturing process in detail of any one type. **07****OR****(b)** Explain the technology of Isoprene Rubber (IR). **07****Q. 3 (a)** Discuss the basic advantages and limitations of polybutadiene rubber (PBR). **07****(b)** List the basic production methods used for SBR. Explain any one in detail. **07****OR****Q. 3 (a)** (i) Short note: medium – vinyl polybutadiene. **04**(ii) List name of basic stereo regular forms of polybutadiene rubber. **03****(b)** Short note on OESBR (oil extended rubber) **07****Q. 4 (a)** Explain the vulcanization systems used for Butyl rubber.(IIR) **07****(b)** “Silicon rubber is a versatile material.” justify the statement. **07****OR****Q. 4 (a)** Write the name of available types of Halogenated butyl rubber with their manufacturing chemistry & advantages. **07****(b)** Explain the manufacturing process of silicone rubber. **07****Q. 5 (a)** (i) Draw the flow diagram of production of sulfur modified emulsion polymerization of Polychloroprene rubber. **05**(ii) Write the function of sodium salt of naphthalene sulphonic acid formaldehyde condensate in production of sulfur modified chloroprene rubber. **02****(b)** List the beneficial properties and applications of EPDM rubber. **07****OR****Q. 5 (a)** Mention the available grades of neoprene rubber and explain each in detail. **07****(b)** Explain the effects of Ethylene to propylene ratio on different properties of EPDM rubber. **07**
