

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI(NEW) – EXAMINATION – SUMMER 2019****Subject Code:2162602****Date:14/05/2019****Subject Name:Synthetic Rubbers****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** (a) What do you mean by Carboxylated rubbers? Write its advantages. (03)  
(b) Give abbreviation and chemical name for Thiokol. Mention its basic grades and give differences between them. (04)  
(c) Write about the microstructure of Isoprene Rubber produced by Ziegler Natta Catalyst system. Discuss about its production also. (07)
- Q.2** (a) Why an optimum Chlorine content is important for Hypalon? Give reason. (03)  
(b) List various types of Fluorocarbon Elastomers. Mention their fundamental properties and applications also. (04)  
(c) "The Acrylonitrile (ACN) content is an important parameter for Acrylonitrile Butadiene Rubber properties." Justify the statement. (07)

**OR**

- (c) Name the polymerization technique used for large scale production of Acrylonitrile Butadiene Rubber. Explain it with flow diagram. (07)
- Q.3** (a) Give the polymerization temperature value for production of Butyl rubber. Write its significance also. (03)  
(b) List the basic vulcanization system for Butyl rubber. Explain about any one. (04)  
(c) Discuss about the batch process for manufacturing of Styrene Butadiene Rubber with flow diagram. (07)

**OR**

- Q.3** (a) Why Butyl rubber has an excellent Air impermeability property? Give reason. (03)  
(b) Write about the advantages of Halogenated Butyl rubber over Conventional Butyl rubber. (04)  
(c) Give synthesis reaction for Styrene Butadiene Rubber. Discuss about the basic grades of Emulsion polymerized Styrene Butadiene Rubber. (07)
- Q.4** (a) What do you mean by Sulfur modified Chloroprene Rubber? Write in brief. (03)  
(b) Write about the importance of Magnesium Oxide (MgO) for vulcanization of Polychloroprene rubber with necessary reaction mechanism. (04)  
(c) List the process for production of Ethylene Propylene Diene Methylene Rubber (EPDM). Explain about any one in detail. (07)

**OR**

- Q.4** (a) What do you mean by W-type Chloroprene rubber? Write its basic characteristics. (03)  
(b) How Polymerization temperature affect on Crystallinity of Chloroprene rubber? Explain with suitable graphical representation. (04)  
(c) Discuss about the basic characteristics of Third monomer for Ethylene Propylene Diene Methylene Rubber (EPDM). Name available third monomers for EPDM synthesis with their structures. (07)

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- Q.5** (a) Why Crepe hardening occurs in Silicone rubber? Write about remedies also. (03)  
(b) Give necessary reaction mechanisms for synthesis of Silicone rubber. (04)  
(c) Name the polymerization technique for High Cis-1, 4 Polybutadiene Rubber. Explain it with flow diagram. (07)

**OR**

- Q.5 (a) How Silicone rubber is unique among all synthetic rubbers? Justify your answer in terms of molecular structure. (03)
- (b) Show the Peroxide vulcanization mechanism of Silicone rubber. (04)
- (c) Discuss about Properties and applications of Polybutadiene Rubber in detail. (07)

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