

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV • EXAMINATION – SUMMER • 2014****Subject Code: 143602****Date: 23-06-2014****Subject Name: Rubber Chemistry and Natural Polymers****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 (a) Answer the following questions : 07

- (i) Write basic reaction for the formation of Urethane Group
- (ii) What is special property of Polychloroprene?
- (iii) What are the monomers of Buna-N?
- (iv) Name the repeating unit of Natural Rubber?
- (v) What is Neoprene?
- (vi) What are Vitons and Hypalon?
- (vii) What is Sulfur vulcanization

(b) Match the following 07**A**

- a) Buna –S
- b) Natural Rubber
- c) EPDM
- d) Sucrose
- e) Butyl Rubber
- f) Protein
- g) Cellulose

B

- i) Limited Olefin Functionality
- ii) Biopolymer
- iii) Cis Poly isoprene
- iv) IIR
- v) Polysaccharide
- vii) SBR
- viii) Disaccharide

Q.2 (a) Write in detail preparation, properties and uses of Nitrile Rubbers. 07**(b) Explain Conventional, Semi Efficient and Efficient Sulphur Vulcanization. 07****OR****(b) Write short notes on any two monomers including its synthetic routes 07**

- a) Styrene b) Butadiene c) Isoprene d) Isobutylene

Q.3 (a) Write a detailed note on rubber compounding. 07**(b) Write note on the natural polymers with examples and structures? 07****OR****Q.3 (a) How the structure of Natural Rubber is confirmed using Ozonation? Explain in detail showing the equation. 07****(b) Write a note on SBR , its monomers, production, properties and applications. 07**

Q.4 (a) Write note on extraction and preservation of Natural Rubber latex. **07**
What is the typical composition of Natural Rubber Latex extracted from tree?

(b) Write important ingredients used for the production of SBR or NBR with examples. **07**

OR

Q.4 (a) Write a detailed note on Neoprene including its synthesis and coagulation for making solid rubber. **07**

(b) Write the structure of Chitosan. Write the preparation of Chitosan from Chitin and its bio medical usage. **07**

Q.5 (a) What are the important ingredients used for the manufacturing of polyurethane elastomers and general reaction scheme for production. **07**

(b) Write a detailed note on the types of biopolymers, their classification, usage and environmental benefits. **07**

OR

Q.5 (a) Write a note on production, properties and usage of EPDM . **07**

(b) Write notes on any two **07**
i) Halo butyls
ii) Natural Polymers
iii) Cellulose and its derivatives
iv) Natural Rubber Collection & preservation
