

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV • EXAMINATION – WINTER • 2014

Subject Code: 142602

Date: 29-12-2014

Subject Name: Natural Rubber Science and Technology

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 Answer the following. (14)

- (i) Define the term: Graft co-polymer
- (ii) Explain the mechanism of Diffusion in Rubber.
- (iii) Write the difference between Pale crepe and Sole crepe.
- (iv) Draw the network structure of Liquid Rubber.
- (v) What do you mean by Reclaimed Rubber?
- (vi) Write the purpose of chemical modification in Natural Rubber.
- (vii) Draw the schematic diagram showing Rubber block in compression stress.

Q. 2 (a) Write about basic types of degradation reactions in Natural Rubber. (07)

(b) List the conventional grades of Natural Rubber and explain about any two in detail. (07)

OR

(b) Discuss about Vulcanizate properties and applications of Natural Rubber. (07)

Q. 3 (a) Draw the flow diagram for Digester process for manufacturing of Reclaimed Rubber and explain it. (07)

(b) Give the reaction mechanism for grafting of reactive Polystyrene Prepolymer with Natural Rubber and explain its chemistry. (07)

OR

Q. 3 (a) Discuss about advantages and applications of Reclaimed Rubber. (07)

(b) Describe the Graft co-polymers as thermoplastic rubbers. (07)

Q. 4 (a) Explain the theory of Wax blooming for Natural Rubber. (07)

(b) Short note on Crystallization in bridge bearings. (07)

OR

Q. 4 (a) Show the schematic representation of water absorption model for Vulcanized Natural Rubber and explain it. (07)

(b) Discuss the theory of Low temperature Crystallization process in detail. (07)

Q. 5 (a) List the advantages of Powdered Rubber and explain about any two in detail. (07)

(b) Explain the following: (i) Hysteresis Loss (ii) Transmissibility. (07)

OR

Q. 5 (a) Discuss about basic methods for preparation of Powdered Rubber. (07)

(b) Explain in detail about Creep and stress relaxation in Natural Rubber. (07)
