

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV • EXAMINATION – WINTER 2013

Subject Code: 142602

Date: 23-12-2013

Subject Name: Natural Rubber Science and Technology

Time: 02:30 pm to 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: Tapping
- (ii) Write the chemical name and structure of Natural Rubber.
- (iii) What do you mean by grafting process for Natural Rubber?
- (iv) Explain the term 'Hysteresis Loss'.
- (v) Show the network structure of liquid rubber.
- (vi) What do you mean by partitioning agent? Give its examples.
- (vii) Define the term 'Reclaimed Rubber'.

Q. 2 (a) Discuss the advantages of powdered rubber. **(07)**

Q. 2 (b) Discuss the basic degradation reactions observed in Natural rubber. **(07)**

OR

(b) Write a short note on Epoxidized Natural Rubber (ENR). **(07)**

Q. 3 (a) List the grafting conditions for Polystyrene with Natural rubber. Explain any one in detail. **(07)**

(b) Discuss in detail about the wax blooming phenomena. **(07)**

OR

Q. 3 (a) Describe the grafting chemistry with reaction mechanism. **(07)**

(b) Show the water absorption model for natural rubber and explain it in detail. **(07)**

Q. 4 (a) List the stages of low temperature crystallization and discuss them. **(07)**

(b) Describe the Reclaimator process for manufacturing of reclaimed rubber. **(07)**

OR

Q. 4 (a) Discuss the low temperature crystallization observed in Natural Rubber by following the experimental set up of tensile test and compression test specimens respectively. **(07)**

(b) Write about advantageous properties and applications of reclaimed rubber. **(07)**

Q. 5 (a) Write a short note on pale crepe. **(07)**

(b) Explain creep behavior and stress relaxation respectively observed in Natural Rubber. **(07)**

OR

Q. 5 (a) Write a short note on Ribbed Smoke Sheet (RSS). **(07)**

(b) Discuss environmental factors which affect properties of Natural Rubber. **(07)**
