

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-IV (New) EXAMINATION – WINTER 2015

Subject Code: 2142602

Date: 01/01/2016

Subject Name: Natural Rubber Science & Technology

Time: 02:30pm to 05:00pm

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 Non-Rubber Substances (NRS) present in Natural rubber.
- (ii) Write the importance of Partitioning agent in Powdered rubber.
- (iii) Give any one example showing Diffusion mechanism in Polymer.
- (iv) Write the advantages of Liquid rubber.
- (v) What do you mean by Graft Co-polymer?
- (vi) Define the term: Reclaimed rubber
- (vii) Write the advantages of strain crystallization in Natural Rubber.

Q. 2 (a) List the modified grades of Natural Rubber. Explain about any two in detail. (07)

Q. 2 (b) Explain in detail about advantages of Powdered rubber relative to Bale rubber. (07)

OR

Q. 2 (b) List the name of methods for manufacturing of Powdered rubber and write about any one in detail. (07)

Q. 3 (a) Give structural representation of Graft Co-polymer and explain the grafting chemistry in detail with reaction mechanism. (07)

(b) List the basic stages of Low temperature crystallization in Natural Rubber and discuss the whole phenomena in detail. (07)

OR

Q. 3 (a) Write about the reaction conditions for preparation of NR- Graft Co-polymer and explain any one in detail. (07)

(b) Draw the schematic diagram showing low temperature crystallization experiment with application of Tensile stress and explain it. (07)

Q. 4 (a) Discuss about the diffusion of hydrocarbon liquids and oil in vulcanized rubber. (07)

(b) Write about Environmental factors which affect on natural rubber and explain it in detail. (07)

OR

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Q. 4 (a) Draw the Water absorption model showing Diffusion mechanism in Natural Rubber and explain it in detail. (07)

(b) Explain the chemistry of Epoxidation for Natural Rubber by giving (07)

reaction mechanism.

- Q. 5 (a) Discuss the advantages and applications of Reclaimed rubber. (07)**
(b) Explain the terms : (i) Transmissibility (ii) Buckling (07)

OR

- Q. 5 (a) List the name of methods for manufacturing of Reclaimed rubber and (07)**
explain any one in detail.
(b) Derive the formula of Shear modulus and Shear stiffness for Bonded (07)
rubber components.
