

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE – SEMESTER – V (NEW) EXAMINATION – WINTER 2015

Subject Code: 2152601

Date: 17/12/2015

Subject Name: Vulcanisation

Time: 10:30am to 1:00pm

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) Write any two principal structural changes observed in Rubber after vulcanisation.
- (ii) Give the difference between the cure curves of NR & SBR.
- (iii) Write the formula to determine the degree of shrinkage for rubber article.
- (iv) Which rubbers are cured by metal oxides? Why?
- (v) List the various types of sulphur donors.
- (vi) Give the classification of peroxides with their structures.
- (vii) What do you mean by Dynamic Vulcanisation?

Q. 2 (a) Explain the influence of crosslink density on vulcanisate properties with help of graphical representation. (07)

Q. 2 (b) Explain the chemistry of accelerated sulfur vulcanisation for diene rubbers with necessary reaction steps. (07)

OR

(b) Write a detailed note on characteristics and importance of sulfur and various Allotropes of sulfur. (07)

Q. 3 (a) Discuss in detail about Thiazole accelerators. (07)

(b) List the advantages & disadvantages of Peroxide curing system. (07)

OR

Q. 3 (a) Discuss in detail about Dithiocarbamates accelerators. (07)

(b) Discuss the non sulphur vulcanization of olefin rubbers with suitable example. (07)

Q. 4 (a) Short note on: "Fluidised Bed Vulcanisation". (07)

(b) Justify the relationship between Vulcanisate and structure properties like Abrasion & Fatigue. (07)

OR

Q. 4 (a) List out the Batch curing methods and explain any one in detail. (07)

(b) Explain the importance of accelerator in sulphur Vulcanisation. (07)

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Q. 5 (a) How to obtain uniform vulcanization throughout thick sectioned (07)

rubber articles? Explain in detail.

(b) Discuss about the importance of Vulcanisation conditions in detail. (07)

OR

Q. 5 (a) Explain the chemical method to determine the state of cure. (07)

(b) Discuss in detail about Rheograph. (07)
