

Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2024

Subject Code:3152612

Date:25-11-2024

Subject Name:Reclaimed Rubber & its Technology

Time:10:30 AM TO 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.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Give the difference between de-vulcanisation process and reclamation process? (03)
(b) Explain carbon foot-print in the case of reclaim rubber. (04)
(c) List down all the techniques used for the characterization of cross-link density & explain Gel Permeation Chromatography in detail. (07)
- Q.2** (a) Is it possible to de-vulcanise peroxide cure rubber by Micro-biological de-vulcanisation process? Explain with suitable reasons. (03)
(b) Mention the different types of devulcanization techniques with the basis of process. (04)
(c) Discuss the advantages of mechanical de-vulcanisation process & explain Watson Brown HSM process in detail. (07)

OR

- (c) Discuss the dis-advantage of mechanical de-vulcanisation in the presence of chemical agent & explain de-vulcanisation of EPDM rubber for the same de-vulcanisation process. (07)
- Q.3** (a) Write the dis-advantages of microwave de-vulcanisation process. (03)
(b) Which process is used for the preparation of Drab reclaim? Explain the process in detail. (04)
(c) Explain chemical analysis test carried out on waste rubber prior to de-vulcanisation. (07)

OR

- Q.3** (a) Give the dis-advantages of micro-biological de-vulcanisation process. (03)
(b) Which process is used for the preparation of Butyl reclaim? Explain the process in detail. (04)
(c) Explain test can be carried out to determine processing properties of de-vulcanised rubber. (07)

- Q.4** (a) Write the cure characteristic of BR/WTR blends. (03)
(b) Among all NR & SR blends with WTR, which one is the most superior in terms of mechanical property and why? (04)
(c) Explain blends of CR and Maleic anhydride grafted WTR. (07)

OR

- Q.4** (a) Write the cure characteristic of SBR/WTR blends. (03)
(b) Among all NR & SR blends with WTR, which one is the most superior in terms of ageing property and why? (04)
(c) Explain blends of NBR and Maleic anhydride grafted WTR. (07)

- Q.5** (a) Give the advantage of grafting on to WTR blends. (03)
(b) Write in brief about the Pan de-vulcanisation process. (04)
(c) Discuss in detail about the effect of silane coupling agent on NBR/WTR blends. (07)

OR

- Q.5** (a) Give the advantage of silane coupling agent. (03)
(b) Explain reclaimator de-vulcanisation process. (04)
(c) Discuss in detail about the effect of silane coupling agent on SBR/WTR blends. (07)
