

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2020

Subject Code:3152601

Date:27/01/2021

Subject Name:Vulcanization

Time:10:30 AM TO 12:30 PM

Total Marks: 56

Instructions:

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	(a) Why selenium is not used as a vulcanizing agent though it takes same place along with sulphur in periodic table?	03
	(b) Distinguish vulcanized rubber and unvulcanized rubber	04
	(c) Explain the construction and working of Oscillating Disc Rheometer(ODR) with labeled diagram.	07
Q.2	(a) List the major components of structure of rubber vulcanizate.	03
	(b) Construct the labeled diagram showing different types of crosslinks are formed during the sulphur vulcanization	04
	(c) Explain the vulcanization of thick rubber article.	07
Q.3	(a) List any two examples of sulphur donors with their structure.	03
	(b) Illustrate sulphur vulcanization crosslinking network structure with suitable diagram.	04
	(c) Write a short note on Sulphenamide accelerator.	07
Q.4	(a) List out any two examples of peroxides with carboxyl group with their structure.	03
	(b) Illustrate post vulcanization reaction network reaction with suitable diagram.	04
	(c) Write a short note on Dithiocarbamate accelerator.	07
Q.5	(a) List out the different phases observed during free heating.	03
	(b) Compare the saturated steam vulcanization and superheated steam vulcanization.	04
	(c) Explain the chemical method and physical method respectively to assess the state of cure.	07
Q.6	(a) How vulcanization is carried out in jacketed autoclave?	03
	(b) Compare different continuous vulcanization line on the basis of their key features.	04
	(c) Explain the limitations of vulcanization temperature.	07
Q.7	(a) Summarize the principle of electone beam vulcanization technique.	03
	(b) How vulcanization is carried out through rotocure?	04
	(c) Explain the vulcanization in water.	07
Q.8	(a) Summarize the principle of microwave curing.	03
	(b) What are advantages and disadvantages of Liquid Curing Method (LCM)?	04
	(c) Explain the fluid bed vulcanization.	07
