Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V • EXAMINATION - WINTER • 2014

		oject Code: 152601 Date: 26-11-2014	
	Tin	oject Name: Vulcanization ne: 10.30 am - 01.00 pm Total Marks: 70 ructions:	
	IIISU	 Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks. 	
Q.1	(a)	Discuss the differences between vulcanization properties of Natural Rubber and Synthetic Rubber.	07
Q.1	(b) i	Answer the following Define the given terms: (i) Induction Time (ii) Scorch Time (iii) Reversion Time (iv) Cure Rate	04
	ii	Explain the term 'Ebonite'.	03
Q.2	(a)	With labeled diagram, explain construction and working of Oscillating Disc Rheometer (ODR).	07
Q.2	(b)	Answer the following	
	i	How an assessment of state of cure is done by chemical method?	05
	ii	Which different types of crosslinks take place during sulphur vulcanization? OR	02
Q.2	(b)	Answer the following	
	i	How an assessment of state of cure is done by physical method?	04
	ii	Give any two examples of sulphur donors with their structures.	03
Q.3	(a)	Discuss in detail about thiourea accelerators.	07
Q.3	(b)	Answer the following	
	i	With suitable examples, explain the classification of peroxides as a vulcanizing agent.	04
	ii	Write in brief about dynamic vulcanization. OR	03
Q.3	(a)	Discuss in detail about guanidine accelerators.	07
Q.3	(b)	Answer the following	0.5
	i ii	Write down advantages and disadvantages of peroxide vulcanization. List out the properties of unvulcanized rubber compound.	05 02
	11	List out the properties of unvulcanized rubber compound.	02
Q.4	(a)	Discuss in detail about molten salt bath method.	07
Q.4	(b)	Answer the following	
	i 	Write a short note on shawbury curometer.	05
	ii	List the properties which are strongly affected due to increment in crosslink density. OR	02
Q.4	(a)	Explain the construction and working of microwave vulcanization equipment. Which products can be cured by microwave vulcanization technique?	07

Q.4	(b) i ii	Answer the following Explain an effect of crosslink structure on the dynamic properties of vulcanizate. List out the properties which are less strongly affected due to increment in crosslink	05 02
		density.	
Q.5	(a)	Describe hot air vulcanization.	06
Q.5	(b)	Answer the following	
Q.C	i	How vulcanization is carried out by sulphur dichloride?	04
	ii	Compare chemical vulcanization with irradiation processing.	04
		OR	•
Q.5	(a)	Describe vulcanization in water.	06
Q.5	(b)	Answer the following	
_	i	Explain the principle of ultrasonic vulcanization.	04
	ii	Give comparison between various continuous vulcanization techniques. ***********************************	04