GUJARAT TECHNOLOGICAL UNIVERSITY BE: Vth SEMESTER-EXAMINATION - MAY/JUNE - 2012  Subject code: 152601 Date: 01/06/2  Subject Name: Vulcanization  Time: 02:30 pm - 05:00 pm Total Mark  Instructions:  1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks.  Q.1 (a) Answer the following i. What are the drawbacks of raw rubber? How they are removed? ii What is an effect of thickness on vulcanization process?  Q.1 (b) Discuss the structure of rubber vulcanizate.  Q.2 (a) Explain the rheograph with its characteristic features.  Q.2 (b) Write a short note on various allotropic forms of sulphur. OR  Q.2 (b) What is a basic principle to calculate the degree of shrinkage? How is i calculated?  Q.3 (a) Answer the following i. Give the generally accepted reaction scheme for accelerated sulphu vulcanization. ii. Define the following terms: (i) Rate of Cure (ii) State of Cure (iii) Crosslink density (iv) Post Cure (v) Peak Cure  Q.3 (b) Explain the vulcanization of elastomers by metal oxide with suitable examples.  OR  Q.3 (a) Answer the following i. Explain the role of amine type accelerators in vulcanization. ii. Write about the Bismaleimides as a vulcanizing agent.  Q.3 (b) What are the different ways to modify the basic cure system?  Q.4 (a) Write a short note on Dynamic Vulcanization ii what are the different ways to modify the basic cure system?		
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Explain the Mooney-Rivlin equilibrium method to determine the state of **04** 03

Q.4 (a) Discuss the effect of crosslink density on the following properties of rubber vulcanizate: (i) Modulus and Strength (ii) Compression Set

**Q.4** 

**(b)** Answer the following

What are the advantages of Moving Die Rheometer over Oscillating Disc ii. Rheometer?

**07** 

Q.5	(a)	Explain the prime compounding requirements of the material to be cured by microwave. Also write about the major components of the microwave apparatus.	07
Q.5	<b>(b)</b>	Answer the following	
	i.	Write about the rotocure	04
	ii.	Give the classification of sulphur vulcanization system.  OR	03
Q.5	(a)	Write a short note on Electron Beam Vulcanization.	07
Q.5	<b>(b)</b>	Answer the following	
	i.	How is vulcanization carried out in autoclave?	04
	ii.	Write about the solubility of sulphur in rubber.	03

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