Seat No.:	Enrolment No
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GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV • EXAMINATION - SUMMER 2013

Sub	ject (Code: 142604 Date: 17-06-2013	
Sub	ject I	Name: Introduction to Rubbers and Rubbery materials	
	_	:30am – 01:00pm Total Marks: 70	
	uction	•	
	1.	Attempt all questions.	
	2. 3.	Make suitable assumptions wherever necessary. Figures to the right indicate full marks.	
Q. 1	(i)	Describe the term: "Glass Transition Temperature".	(14)
	(ii)	"NR is having excellent tensile strength". Justify the statement.	` '
	(iii)	Give the synthesis reaction of poly -chloroprene rubber.	
	(iv)	Write the equation for Gaussian theory of rubber elast ty.	
	(v)	List the name of non-sulphur vulcanizing agents.	
	(vi)	What is mastication? What is the need to masticate the Rubber?	
	(vii)	What is the function of retarders? Write the name of a yone retarder.	
Q. 2	(a)	Short note on "Pale Crepe".	(07)
	(b)	Explain in detail about classification of polymers.	(07)
		OR	
	(b)	Explain in detail about (i) Hevea plus MG Rubber (ii) rior Processing Rubber (iii) Deproteinized Natural Rubber.	(07)
Q.3	(a)	Write the importance of third diene monomer in chemist y of EPDM and give their name and structures.	(07)
	(b)	Give the synthesis reaction of IIR. Explain its chemis ry, properties and applications.	(07)
		OR	
Q. 3	(a)	Answer the following.	
	(i)	List the available types of silicone rubber.	(02)
	(ii)	Explain the chemistry of silicone rubber by giving the structure.	(05)
	(b)	Write the synthesis reaction of NBR. Explain its chemistry, properties and applications	(07)
Q. 4	(a)	Write down the primary requirements concerning structu for effective rubbery properties. Write down the factors determining for the Tg.	(07)
	(b)	Explain in detail the Gaussian theory of rubber elasticity.	(07)
	()	OR	· /
Q. 4	(a)	Short note on chain flexibility and weak links.	(07)
C , -	(b)	Discuss about Rubber elasticity in shear and compression.	(07)
	()	P.T.O	. ,
Q.5	(a)	Write about the classification of fillers in detail.	(07)
	(b)	Describe the construction and working principal of internal mixers. OR	(07)
Q. 5	(a)	Explain about Antidegradants and Accelerators in detail.	(07)
	(b)	Explain the process of open mill with the diagram show ng the features of a two – roll open mill.	(07)
