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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- IVth SEMESTER–EXAMINATION – MAY/JUNE- 2012

Subject code: 142604 **Date: 31/05/2012**

Subject Name: Introduction to Rubbers & Rubbery materials

Time: 10:30 am – 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.**

Q. 1	**(a)**	Discuss in detail about the construction and working of internal mixer.	**07**
	(b)	Answer the following.	
	(i)	Explain the classification of accelerated Sulphur vulcanization system.	**04**
	(ii)	Which structural changes are brought about when rubber is vulcanized?	**03**
Q. 2	**(a)**	Discuss the applications and properties of reclaimed rubber.	**07**
Q. 2	**(b)**	Explain the classification of Polymers.	**07**
		OR	
	(b)	Explain in detail about (i) Glass Transition Temperature (ii) Polymerization (iii) Hysteresis Loss.	**07**
Q. 3	**(a)**	Explain the Rubber elasticity in compression stress with appropriate diagram.	**07**
	(b)	List the primary requirements to exhibit effective rubbery properties and explain in detail.	**07**
		OR	
Q. 3	**(a)**	Explain the Rubber elasticity in shear stress and derive the formula for shear stiffness with diagram.	**07**
	(b)	List the factors affecting heat resistance of rubber and explain all the factors in detail.	**07**
Q. 4	**(a)**	Give Classification of fillers use in Rubber compounding.	**07**
	(b)	Short note on Ribbed Smoke Sheet (RSS).	**07**
		OR	
Q. 4	**(a)**	Answer the following.	
	(i)	Short note on Antidegradents.	**04**
	(ii)	Draw the schematic representation of structure of Carbon Black.	**03**
	(b)	Define the term: (i) Latex (ii) Tapping. Explain the Tapping process in detail.	**07**
Q. 5	**(a)**	Draw the structure of Polybutadiene Rubber. Explain its chemistry, properties and applications.	**07**
	(b)	Draw the structure of Butyl rubber. Explain its chemistry and grades in detail.	**07**
		OR	
Q. 5	**(a)**	Explain about the requirement of third monomer in EPDM rubber. Draw the structures of EPDM terpolymer.	**07**
	(b)	Draw the structure of Styrene Butadiene Rubber. Explain its chemistry, properties and applications.	**07**

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