Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V • EXAMINATION – SUMMER 2013

Subject Code: 152605 **Date: 23-05-2013**

Subject Name: Rubbers: Manufacturing and Its Applications

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		Answer the following.	**14**
	(i)	List the different types of Belt.	
	(ii)	Give the name of different parts of tyre.	
	(iii)	Write the structural formula of following rubbers (i) Silicon rubber (ii) Isoprene rubber.	
	(iv)	Define the term õVulcanizationô.	
	(v)	Give the classification of major fillers used in rubber industry.	
	(vi)	Write the synthesis reaction for Acrylonitrile monomer.	
	(vii)	List the types of carbon black.	
Q. 2	**(a)**	Define the termôHoseô. Write the overview of manufacturing process of Hose.	**07**
Q. 2	**(b)**	Explain any two manufacturing process for synthesis of Butadiene monomer in detail with reaction mechanism.	**07**
		OR	
	(b)	Describe in detail about any two manufacturing process for synthesis of Chloroprene monomer with reaction mechanism.	**07**
Q. 3	**(a)**	Explain the manufacturing process for production of Butyl rubber with flow diagram.	**07**
	(b)	Discuss the properties and applications of Ethylene Propylene Diene Methylene (EPDM) Rubber.	**07**
		OR	
Q. 3	**(a)**	Describe the manufacturing process for production of Styrene Butadiene Rubber with flow diagram.	**07**
	(b)	Explain the properties and applications of Acrylonitrile Butadiene Rubber.	**07**
Q. 4	**(a)**	Describe about (i) Superior processing rubber (SP rubber) (ii) Thermoplastic natural rubber (TPNR) (iii)Skim rubber.	**07**
	(b)	List the applications of rubber in general field.	**07**
		OR	
Q. 4	**(a)**	Write the name of major vulcanization system and explain any two in detail.	**07**
	(b)	List the applications of rubber in automobile field.	**07**
Q. 5	**(a)**	Explain about following non-black fillers (i) China Clay (ii) Whiting.	**07**
	(b)	List important grades of carbon black and explain about their properties and application.	**07**
		OR	
Q. 5	**(a)**	Short note on ñProcess oilò.	**07**
	(b)	Explain the basic concepts of Caoutchouc.	**07**

****