Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER - VI (NEW).EXAMINATION - WINTER 2016

Date:26/10/2016

Total Marks: 70

Subject Code: 2162604

Time: 10:30 AM to 01:00 PM

Subject Name: Characterization of Rubber

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	1. 2. 3.	Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.	
Q.1	(a) i ii	Answer the following Write down the meaning of given terms:(i) SCI WG-1 (ii) SCI WG-3 Give the full forms of the mentioned terms: (i) ASTM (ii) ANSI (iii) BSI (iv) CEN (v)DIN	02 05
Q.1	(b)	Define the given terms:(i)Plateau (ii) Peak(iii) Base Line (iv) Peak Area (v)Peak Height (iv)Peak Width	07
Q.2 Q.2	(a) (b)	Discuss in detail about the applications of various microscopic techniques in characterization of rubber and related materials. Answer the following	07
	i ii	Give the different circumstances in which standard test method is used. Write a short note on Small Angle X-ray Scattering. OR	03 04
Q.2	(b) i ii	Answer the following List out the standard testing conditions. Write a short note on Wide Angle X-ray Scattering.	03 04
Q.3 Q.3	(a) (b)	Discuss the classification of Thermogravimetirc Curves. Discuss a can of Dynamic Mechanical Analysis (DMA) showing the types of transitions seen during the analysis by taking suitable example of rubber. OR	07 07
Q.3 Q.3	(a) (b) i ii	How is Dynamic Mechanical Analysis carried out under forced vibration? Answer the following Which different types of crucibles are used in Thermogravimetric Analysis? Which characteristic information of rubber is obtained by Differential Scanning Calorimetry (DSC)?	07 03 04
Q.4 Q.4	(a) (b) i ii	Discuss in detail about the classification of Gas Chromatography. Answer the following Explain the term chromatography. What do you mean by High Performance Liquid Chromatography? List the factors responsible for the success of the same.	07 03 04
Q.4 Q.4	(a) (b)	OR Discuss in detail about the Gel Permeation Chromatography. Answer the following Explain the term eluant.	07
	i ii	What do you mean by partition ratio? List the factors affecting the partition ratio?	03

Q.5	(a)	Discuss the schematics of Transmission Electron Microscopy (TEM).	PTO. 07
Q.5	(b)	Answer the following	
	i	What are the advantages of the scanning Electron Microscopy over Optical Microscopy?	03
	ii	Which characteristic information is obtained by Scanning Electron Microscopy?	04
		OR	
Q.5	(a)	Discuss the Schematic of Scanning Electron Microscopy (SEM).	07
Q.5	(b)	Answer the following	
	i	What do you mean by specimen interaction volume? On which factors it depends?	
	ii	Which signals are generated when electron beam strikes to a sample? Explain it with labeled diagram. ***********************************	04