Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI (NEW) - EXAMINATION – SUMMER 2016 Subject Code:2162604 Date:13/05/2016			5/2016
Subject Name: Characterisation of Rubber Time: 10:30 AM to 01:00 PM Instructions: Total Mar		:ks: 70	
	2. N	Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.	
Q.1	(a)	Give the classification of standards. Write a note on any two.	07
Q.1	(b) i	Answer the following Explain the terms: (i) Acetone Extraction (ii) Chloroform Extraction	04
	ii	Write down the full form of given terms: (i) BIS (ii) DIN (iii) IEC	03
Q.2	(a)	Describe the functional aspects of Transmission Electron Microscopy (TEM) with block diagram of instrument.	07
Q.2	(b) i	Answer the following What do you mean by specimen interaction volume? Write on factors affecting it.	04
	ii	Write a brief note on electron gun. OR	03
Q.2	(b)	Describe the functional aspects of Scanning Electron Microscopy (SEM) with block diagram of instrument.	07
Q.3	(a)	Give neat block diagram of thermobalance and describe the functions of its components.	07
Q.3	(b) i	Answer the following Write on the classification of Differential Scanning Calorimetry (DSC) apparatus.	04
	ii	Define the given terms: (i) Thermal Analysis (ii) Evolved Gas Analysis (iii) Heating Rate OR	03
Q.3	(a)	Discuss the applications of Thermogravimetry (TG) in the field of rubber with suitable examples.	07
Q.3	(b)	What is Dynamic Mechanical Analysis (DMA)? Give the description of DMA apparatus.	07
Q.4	(a)	Discuss in detail about Gel Permeation Chromatography (GPC).	07
Q.4	(b) i ii	Answer the following What is chromatogram? How is it obtained? What is its use? Write a brief note on planner chromatography.	04 03

Q.4	(a)	Give a detailed account on various chromatographic parameters and their significance.	07
Q.4	(b)	List out the types of detectors used in Gas Chromatography (GC). Explain any two.	07
Q.5	(a) i ii	Answer the following Explain the terms absorption spectra and emission spectra respectively. What are dispersing devices? How do they function?	04 03
Q.5	(b)	What do you mean by chemical shift? Explain the output of Nuclear Magnetic Resonance (NMR) spectroscopy by taking suitable example of synthetic rubber.	07
		OR	
Q.5	(a)	Answer the following	
	i	Write a note on energy levels of molecules.	04
	ii	List the major components of monachromator. Also define the linear distance with respect to it.	03
Q.5	(b)	Discuss the origin of ultraviolet spectra and explain the working of ultraviolet spectrometer. ***********************************	07
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