

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – WINTER 2018****Subject Code:2162604****Date:30/11/2018****Subject Name:Characterisation of Rubber****Time: 02:30 PM TO 05:00 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)	Write down the full forms of given terms:(i)ANSI(ii)ASTM(iii)CEN	03
Q.1 (b)	List out the chemicals which are used to carry out chloroform extraction of rubber. Also express the result of this test.	04
Q.1 (c)	Discuss in detail about the characterization of various rubbers by following Lassalagne Sodium Fusion method.	07
Q.2 (a)	How the Small Angle X-ray Scattering differs from Wide Angle X-ray Scattering?	03
Q.2 (b)	Give the advantages of Transmission Electron Microscopy over Scanning Electron Microscopy.	04
Q.2 (c)	Explain the given features with respect to microscopy:(i)Secondary Electrons(ii)Back Scattered Electrons	07
OR		
Q.2 (c)	Discuss in detail about different types of lenses used in case of Electron Microscopy.	07
Q.3 (a)	List the factors affecting the result of Thermogravimetric Analysis (TGA).	03
Q.3 (b)	Write a short note on Temperature Modulated Differential Scanning Calorimetry(TMDSC).	04
Q.3 (c)	With suitable examples of rubber and related materials, discuss the applications of Differential Thermal Analysis.	07
OR		
Q.3 (a)	How can we express the result of Thermogravimetric Analysis (TGA)?	03
Q.3 (b)	Draw labeled diagram of Heat Flux Differential Scanning Calorimetry Apparatus.	04
Q.3 (c)	With suitable examples of rubber and related materials, discuss the applications of Dynamic Mechanical Analysis (DMA).	07
Q.4 (a)	Write in brief on classification of column chromatography.	03
Q.4 (b)	Write a short note on different types of stationary phase used in case of Gas Chromatography (GC).	04
Q.4 (c)	Discuss the given features with respect to chromatography:(i)Relative Retention (ii) Resolution	07
OR		
Q.4 (a)	Write in brief on classification of planner chromatography.	03
Q.4 (b)	Write about the different types of sample injection system used in case of Gas Chromatography (GC).	04
Q.4 (c)	Discuss the given features with respect to chromatography:(i)Retention Time (ii) Retention Volume	07
Q.5 (a)	Which different types of radiation sources are used in case of Infrared Spectroscopy (IR)?	03
Q.5 (b)	Write a short note on different types of dispersing devices used in case of spectroscopy.	04
Q.5 (c)	Discuss the Beer- Lambert's law . Also give it's limitations.	07
OR		
Q.5 (a)	Which different types of radiation sources are used in case of Ultraviolet Spectroscopy?	03
Q.5 (b)	Write a brief note on monochromator.	04
Q.5 (c)	With labeled diagram, explain the construction and working of single beam spectrophotometer.	07
