

GUJARAT TECHNOLOGICAL UNIVERSITY**B. E. Sem-VI Examination May 2011****Subject code: 162604****Subject Name: Characterization of Rubber****Date: 21/05/2011****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) Answer the following
- (i) Write the full form of given terms: (i) ANSI (ii) DIS (iii) BSI (iv) CEN **04**
- (ii) Mention the classification of sources of standards. **02**
- (b) Answer the following
- (i) Explain the given terms: (i) Chloroform Extract (ii) Total Extract **04**
- (ii) Write down the procedure to determine unsaponifiable Acetone Extract. **04**
- Q.2**
- (a) How is the characterization of rubber done by Lassalagne Sodium fusion method? **06**
- (b) Answer the following
- (i) Give the schematic diagram of electron solid interaction. **04**
- (ii) Summarize the components of electron microscope. **04**
- OR**
- (b) Answer the following
- (i) Which characteristic information with respect to rubber is obtained by microscopy? **04**
- (ii) How is detection of backscattered electron carried out? **04**
- Q.3**
- (a) Explain the classification of Thermogravimetry curves. **06**
- (b) Discuss a scan of Dynamic Mechanical Analysis showing the types of transitions seen during the analysis by taking a suitable example of rubber. **08**
- OR**
- Q.3**
- (a) How is Dynamic Mechanical Analysis is carried out under forced vibration? **07**
- (b) Answer the following
- (i) Which different types of probes are used in Thermomechanical Analyzer? **04**
- (ii) Which experimental parameters should be noted in Thermogravimetric Analysis apart from result? **03**
- Q.4**
- (a) Answer the following
- (i) What do you mean by High Performance Liquid Chromatography? List the factors responsible for the success of the same. **04**
- (ii) Write a short note on Thin Layer Chromatography. **07**
- (b) Explain the term Chromatogram. **03**
- OR**
- Q.4**
- (a) How the molecular weight determination is carried out by Gel Permeation Chromatography? Explain it with suitable example. **08**

- (b) Answer the following
- (i) Explain the term Elution. **03**
- (ii) What do you mean by Partition Ratio? List the factors affecting Partition Ratio? **03**
- Q.5** (a) Answer the following
- (i) Explain the Lambert's law with respect to spectroscopy. **04**
- (ii) Write a short note on major components of the Nuclear Magnetic Resonance Spectrometer. **06**
- (b) What do you mean by Nucleating Agent? How can determine the efficiency of Nucleating Agent? **04**
- OR**
- Q.5** (a) Answer the following
- (i) Explain the working of single beam spectrophotometer. **04**
- (ii) Describe the advantages of Fourier Transform Infrared Spectroscopy over the Infrared Spectroscopy. **05**
- (b) How the concentration of clustered water present in the polymer is measured? Explain it with suitable example. **05**
