

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII • EXAMINATION – WINTER • 2014****Subject Code: 173603****Date: 29-11-2014****Subject Name: Evaluation, Testing of Polymers and Rubbers****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) How can Molecular weight be determined using cryoscopy & ebullioscopy? **07**  
(b) Explain the methods of evaluating Molecular weight using Vapour Pressure and Membrane Osmometry. **07**
- Q.2** (a) Write a short note on different types of Molecular weights and show derivation of any two. **07**  
(b) Explain the working of DSC with diagram, graph and its application in field of polymers and rubbers. **07**
- OR**
- (b) How are various physical and chemical properties of a polymer related to its glass transition temperature? **07**
- Q.3** (a) Write a short note on hear distortion temperature and effect of conditioning of sample on various thermal properties. **07**  
(b) Explain melt flow index and its effect on polymer processing. **07**
- OR**
- Q.3** (a) Explain Dynamic Mechanical Analysis. **07**  
(b) Explain the working of FTIR and its application and draw a rough graph to explain the peaks. **07**
- Q.4** (a) Draw and explain the working of XRD. **07**  
(b) Explain rheology & viscosity. **07**
- OR**
- Q.4** (a) How can molecular weight be determined using viscometer? **07**  
(b) Write a short note on UTM and explain tensile and flexural strength. **07**
- Q.5** (a) How can Breakdown voltage and Arc resistance calculated for a polymer sample. **07**  
(b) Explain in short a) Stress b) Abrasion Resistance c) Pencil Hardness **07**
- OR**
- Q.5** (a) Explain in short a) Tear Test b) Fatigue and Wear Resistance c) Creep. **07**  
(b) Explain with diagram TGA and its application. **07**

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