



**NBW-003-010407**    Seat No. \_\_\_\_\_

**M. Sc. (Chemistry) (Sem. IV) (CBCS) Examination**

**April / May - 2017**

**C (PM) - 403 : Physical & Material Chemistry**

*(Chemistry of Materials - I) (New Course)*

**Faculty Code : 003**

**Subject Code : 010407**

Time : 3 Hours]

[Total Marks : 70

**1** Answer the following : (any seven)

- (a) Define Fibers, Surface resistivity, Elastomers, Haze.
- (b) Give an account of Hand lay method.
- (c) State the principle of TGA and its applications.
- (d) What are the composites ? Classify on the basis of matrix.
- (e) Describe rotational casting.
- (f) Differentiate between elastic and visco elastic behavior.
- (g) State the Freeman Carroll equation and write the significance of all the terms involved in it.
- (h) Give an account of electrets.
- (i) Discuss the factors affecting, the properties of composites.
- (j) Draw stress -strain curve for plastics and label all the parts.

**2** Write notes on : (any three)

- (a) Pultrusion method
- (b) Electrical conductivities of solid polymers
- (c) Thermoforming and Calendering
- (d) Bio composites.

**3** Answer the following : (any two)

- (a) Discuss Maxwell model for visco elastic behaviour along with creep in Maxwell element.
- (b) Discuss injection and extrusion methods for polymer processing.

**OR**

- (a) Explain natural and synthetic composites with examples.
- (b) Describe resin transfer moulding process in detail.

**4** Answer the following : (any three)

- (a) Discuss different types of matrix in composites ? Explain with examples.
- (b) Give an account of volume resistivity: and surface resistivity.
- (c) What are the various kinetic parameters evaluated from thermograms ? Discuss Anderson method evaluated for multiple heating rate.
- (d) Explain injection moulding for the polymer processing.

**5** Answer the following : (any two)

- (a) What is the principle of DTA ? Explain the various parts of DTA instrument. Give advantages of this method.
- (b) Discuss contact electrification.
- (c) What is the spinning ? Explain any two methods in detail.
- (d) Explain the various factors affecting mechanical behavior of polymers.

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