

22387

23124

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
  - (2) Answer each next main Question on a new page.
  - (3) Illustrate your answers with neat sketches wherever necessary.
  - (4) Figures to the right indicate full marks.
  - (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

**1. Attempt any FIVE :**

**10**

- (a) State the importance of testing in manufacturing.
- (b) Enlist four mechanical test method for polymers.
- (c) State the significance of Impact strength test method.
- (d) Define thermal conductivity.
- (e) Enlist four different electrical test methods of polymers.
- (f) State the significance of optical properties test methods of polymers.
- (g) List down four different environmental factors which affects polymeric properties.



- 2. Attempt any FOUR :** **12**
- (a) State and explain three organizations for quality of testing in short.
  - (b) Explain creep and stress relaxation in polymers.
  - (c) Explain the test method for finding vicat softening point of plastics.
  - (d) State three factors which affects the dielectric strength of plastic.
  - (e) Explain resistance to bacteria test method for polymers.
- 3. Attempt any FOUR :** **12**
- (a) Define :
    - (i) Density
    - (ii) Specific gravity
    - (iii) Bulk density
  - (b) Explain abrasion resistance test for polymer.
  - (c) Explain differential scanning calorimetry test to measure Tg of plastic.
  - (d) State the formula to calculate the following :
    - (i) Dielectric Strength
    - (ii) Dielectric Constant
    - (iii) Dissipation factor
  - (e) Explain chemical immersion test for polymers.
- 4. Attempt any THREE :** **12**
- (a) Draw stress-strain curve for following materials :
    - (i) Brittle materials
    - (ii) Ductile material
  - (b) Explain shore A and shore D hardness test for polymers.
  - (c) Define :
    - (i) Vicat softening point
    - (ii) Melt flow Index
  - (d) State and explain four factors affecting the Thermogravimetric Analysis (TGA).
  - (e) Explain are resistance test for polymeric sample with its significance.

**5. Attempt any THREE :****12**

- (a) Compare Izod impact strength test with Dart impact strength test.
- (b) Describe brook field viscometer test for polymer with neat sketch.
- (c) Explain with neat sketch of Cup flow test method for thermoset material.
- (d) Define with its formula :
  - (i) Refractive index
  - (ii) Transmittance and Haze percentage
- (e) Explain solvent stress cracking resistance with factors affecting on it.

**6. Attempt any TWO :****12**

- (a) State the working principle, formula and factors affecting on following :
    - (i) Tensile strength
    - (ii) Compressive strength
  - (b) Explain Melt flow index test in detail.
  - (c) Differentiate volume resistivity test with surface resistivity test.
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