

22387

22232

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) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following :

10

- (a) Enlist the types of plastic testing with respect to Destructive & nondestructive.
- (b) Define Tensile strength of plastic and write a formula of ultimate tensile strength & their unit.
- (c) Define Creep property of plastic with suitable diagram.
- (d) State any four significances of thermo gravimetric analysis test of plastic.
- (e) Enlist any four thermal test methods for plastics.
- (f) Define the volume resistivity & surface resistivity of plastics.
- (g) State any two significances of weathering properties test of plastics.



- 2. Attempt any FOUR of the following : 12**
- (a) Explain the test procedure for finding bulk density of plastics.
 - (b) Draw and explain stress – strain curve of polypropylene material.
 - (c) Draw a neat sketch of cup flow and spiral mold for Rheological test of thermoset polymers.
 - (d) State any four factors affecting on Dielectric strength test for plastics.
 - (e) Explain the test procedure of environment stress cracking resistance of plastics.
- 3. Attempt any FOUR of the following : 12**
- (a) Explain the need & the importance of plastic testing.
 - (b) Differentiate between Shore A and Shore D hardness test of plastics.
 - (c) State the significance of thermal conductivity test of plastics.
 - (d) Explain the test procedure of arc resistance of plastics.
 - (e) Describe the immersion test for plastic in detail.
- 4. Attempt any THREE of the following : 12**
- (a) Draw with neat sketch of Izod Impact test for plastic specimen and describe the procedure of Izod Impact test of plastics.
 - (b) Explain with neat sketch hydrostatic properties of plastics in detail.
 - (c) Describe test procedure of oxygen index test with neat labelled diagram.
 - (d) State the melt flow Index of polypropylene for Injection, Extrusion & blow grades.
 - (e) Justify, “Dielectric constant should be low as possible for plastic use in electric insulation application”.

5. Attempt any THREE of the following :**12**

- (a) Draw a creep curve of any plastic, explain creep curve in detail and justify “Creep curve can be used for prediction of life of plastic product”.
- (b) Describe the test procedure for finding filler contents in polymer (Plastics) in detail.
- (c) Differentiate between Vickers softening point and heat distortion temperature test of plastic in detail.
- (d) Select & describe the optical properties test for plastic which is being used for optical lenses.
- (e) State the outdoor weathering properties of Acrylics, Nylon, PolyVinyl Chloride (Rigid) & Polypropylene. (Weather Resistance).

6. Attempt any TWO of the following :**12**

- (a) Draw stress-strain curve for polyethylene, Acetal & Polycarbonate with respective soft, weak, hard & strong plastics.
 - (b) Select & describe test procedure of finding T_g, T_m, Enthalpy, degree of Crystallinity & degradation temperature in detail.
 - (c) Describe the test method used to find Break-down voltage and state the importance of this test.
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