22232

3 Hours / 70 Marks Seat No. | | | | | | | | |

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 respective 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 Tg, Tm, 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.
