

17548

11920

3 Hours / 100 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 TEN of the following: **20****
- a) List any four international standards of testing plastics.
 - b) Define specifications.
 - c) State the significance of stress relaxation.
 - d) Name the durometer used for testing hardness of rubber and PS.
 - e) State the necessity of knowing brittleness temperature of plastics.
 - f) Differentiate between haze and gloss.
 - g) State the value of refractive index of PS and PC.
 - h) State the purpose of determining dielectric constant.
 - i) State the values of dielectric constant of Phenolics and Nylon.
 - j) State the principle of chemical resistance tests.

P.T.O.

- k) Write significance of acetic acid immersion test.
- l) Name any two flow tests for thermosetting plastics.
- m) Define melt flow index.
- n) Write significance of acetone immersion test.

2. Attempt any FOUR of the following: 16

- a) Explain the need of testing plastics.
- b) Describe general form of stress-strain curve for a plastic material.
- c) Define HDT and state its significance.
- d) Write procedure for microscopical method for determination of Refractive Index.
- e) State any four requirements for a plastic material when it is to be used as an insulator.
- f) Explain the test procedure for exposure of plastics to carbon arc lamp.

3. Attempt any FOUR of the following: 16

- a) Explain the effect of following factors on impact strength of plastics.
 - (i) Rate of loading
 - (ii) Notch sensitivity
 - (iii) Temperature
 - (iv) Degree of crystallinity
- b) Explain the measurement of density by pyknometer.
- c) Describe thermal conductivity test procedure.
- d) Write construction and working of equipment used for determining Gloss.
- e) Describe arc resistance test.
- f) Suggest and explain the test to be performed with plastics dinnerware.

4. Attempt any FOUR of the following:**16**

- a) Describe procedure for determination of % elongation of plastics.
- b) Explain haze test with neat sketch.
- c) Explain the constructional details of equipment used for determination of dielectric strength.
- d) Suggest and explain the test for plastic containers if it is to be used for detergent storage.
- e) Explain any one flow test for thermosets.
- f) Name and explain the test used to distinguish inadequately fused and adequately fused PVC.

5. Attempt any FOUR of the following:**16**

- a) Explain creep behaviour of plastics.
- b) Describe test procedure for 3-point loading flexural test.
- c) Explain the effect of molecular structure and crystallinity on optical properties of a plastic.
- d) State any eight components of flammability tester used with plastics.
- e) Explain the test procedure for limiting oxygen index test with plastics.
- f) Define DSC and state its applications.

6. Attempt any FOUR of the following:**16**

- a) Explain the procedure for surface resistivity test for plastic insulator.
 - b) Justify the significance of dissipation factor test.
 - c) Describe accelerated outdoor weathering test using artificial UV light source.
 - d) Explain test procedure to evaluate ESCR of plastics.
 - e) Explain melt flow index test for plastics with neat figure.
 - f) Describe procedure for Hammability test of plastics by horizontal burning method.
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