

17548

15116

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.
 - (8) Use of steam tables, logarithmic, Mollier's chart is permitted.

Marks

1. Answer any TEN :

10 × 2 = 20

- (a) State the need and importances of testing.
- (b) Define (i) Specification, (ii) Standard.
- (c) Define abrasion. State factors affecting abrasion resistance test.
- (d) Define hardness. List types of hardness.
- (e) Why is it necessary to measure thermal properties of a plastic product ?
- (f) Define by brittle temperature. In which applications brittleness temperature of plastic becomes necessary to measure ?
- (g) Suggest any two plastic products for which refractive index measurement is necessary. Name the apparatus on which refractive index is measured.
- (h) List different optical properties of plastic. Write their importances.
- (i) Differentiate between volume resistivity and surface resistivity.
- (j) Explain significances of arc resistance properties of plastic.

P.T.O.

- (k) Name the various chemical tests carried out on plastic product. Suggest suitable test for a plastic dinnerware.
- (l) How are weathering properties classified on basis of application of plastic ?
- (m) What do you mean by under writer laboratory test ?
- (n) Define flammability. List any two flammability tests.

2. Answer any FOUR :

(4 × 4) = 16

- (a) List the different standards used for plastic testing. Write need and importances of standards.
- (b) How are plastic materials classified on the basis of stress-strain curve ? Explain with example.
- (c) Define thermal conductivity. Describe method to determine thermal conductivity of plastic.
- (d) How is gloss on plastic product measured ? Name any two plastic products for which gloss measurement is necessary.
- (e) Describe the importances of dissipation factor, with an example.
- (f) Name the various tests carried out on plastic for different organism. Explain any one test.

3. Answer any FOUR :

(4 × 4) = 16

- (a) Define specific gravity. Explain the method to measure density of plastic granules.
- (b) Define 'creep'. Explain typical creep curve with a diagram.
- (c)
 - (i) Explain the test to measure heat deflection temperature of plastic.
 - (ii) Write name of any two plastic products for which HDT is necessary.
- (d) Define haze. How does it differ from gloss ? Suggest suitable test to measure haze of a plastic.
- (e) Describe the test to measure dielectric constant of a plastic. State factors affecting the test.
- (f) What do you mean by stain resistance ? Describe stain resist test.

4. Answer any FOUR : (4 × 4) = 16

- (a) Define flexural strength. Explain test to measure flexural strength of a plastic.
- (b) Describe method to measure refractive index of a plastic product.
- (c) Explain with a labelled diagram, dielectric strength measurement of plastic.
- (d) Describe UL-94 test to measure flammability of a plastic product.
- (e) Why is acetone immersion test on plastic conducted ? Write the method followed.
- (f) Explain the principle of differential scanning calorimetry. Write its importance.

5. Answer any FOUR : (4 × 4) = 16

- (a) Write stepwise procedure to determine Shore hardness test of a plastic product.
- (b) (i) Draw a labelled diagram of plastic specimen for tensile strength test.
(ii) Explain significance of 'stress relaxation'.
- (c) Describe the 'UV lamp' test to measure weather resistance of a plastic sheet.
- (d) Define MFI. How is it measured ?
- (e) Define rheology. Explain its importance.

6. Answer any FOUR : (4 × 4) = 16

- (a) Describe the hydrostatic pressure test for a plastic pipe.
 - (b) Explain spiral mold test to measure flow behaviour of a thermoset.
 - (c) Outline Xenon arc lamp test, with a diagram.
 - (d) Write procedure to determine volume resistivity of a plastic product.
 - (e) Describe oxygen index test measurement procedure.
 - (f) Name factors responsible for environmental stress cracking in plastics. Explain any one.
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