313356

12425

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) 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) Define testing.

(b) State the four examples of standards used for polymer testing.

(c) Draw the labelled diagram of any one type of tensile test specimen along with dimensions.

(d) State co-efficient of thermal conductivity.

(e) Define dissipation factor.

(f) Elaborate weathering of polymer.

(g) State the test used to measure the resistance of polymer to specific chemical reagent.

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

(a) State the various methods test specimen preparation and which method is preferred the most ?

(b) Draw the generalized stress-strain curve and elaborate the various terms related to it.

(c) Identify and explain the test used to measure hardness of rubber sole for shoes.

(d) State and explain the electrical test used to determine the voltage bearing ability of polymer insulator.

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

(a) Identify and describe the test used for determination of density of powered polymer.

(b) State and describe the loading systems used for determination of flexural strength of hard polymer and ductile polymer.

(c) Draw the labelled diagram of VSP tester and describe its construction.

(d) Elaborate the following terms with respect to insulator, (i) Volume resistance (ii) Surface resistance

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

(a) Explain rotary drum type abrasion resistance test.

(b) State the effect of following factors on HDT of polymer,

(i) Residual stresses

(ii) Load

(iii) Rate of rise of temperature

(iv) Sample thickness

(c) State the effect of following factors on dielectric strength of polymer.

(i) Test specimen thickness

(ii) Temperature

(iii) Electrode geometry

(iv) Holding time

(d) Describe the test used to measure the resistance of polymer to staining.

(e) Elaborate the accelerated weathering test used for measuring the resistance of polymer to UV light.

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

(a) MSBTEMS is interested to measure the impact strength of HDPE film. State and explain the test used for determination of impact strength of HDPE film.

(b) State MFI and describe MFI tester with neat sketch.

(c) State refractive index and describe the refracto-meter method used for determination of refractive index of polymer.

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

(a) Describe with neat sketch the construction and working of UTM used for determination of flexural strength of polymer.

(b) (i) Identify and state the thermal technique used to study the phase transitions in polymers.

(ii) Describe the test used to find out additives composition of polymer.

(c) Explain the test used to measure the resistance of HDPE towards environmental stress cracking along with test specimen, equipment used.

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