



- Notes :
1. All question carry marks as indicted.
 2. Answer **three** question from Section A and **three** question from Section B.
 3. Due credit will be given to neatness and adequate dimensions.
 4. Assume suitable data wherever necessary.
 5. Diagrams and chemical equations should be given wherever necessary.
 6. Illustrate your answer necessary with the help of neat sketches.
 7. Discuss the reaction, mechanism wherever necessary.
 8. Use of cellphone is strictly prohibited in exam.
 9. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION - A

1. a) Explain the selection of polymers on the basis of strength and stiffness and derive equation for desirability factors. 7
- b) Explain in detail the theoretical stress-strain curve for plastic material. Draw the stress-strain curves showing nature of following materials :- 7
 - i) PE
 - ii) PTFE
 - iii) Polyacetal
 - iv) PC

OR

2. a) What are the types of fracture? Explain Griffith's theory of fracture. 7
- b) Discuss in detail the difference between metals and polymers. 7
3. Explain the followings with its test procedure and significance and also discuss in short the factors affecting on it. 13
 - i) Tensile Strength.
 - ii) Izod impact with notch.

OR

4. a) Explain in detail the concept of tensile creep and fatigue in polymers by giving suitable example. 6
- b) Explain in detail the test procedure, significance and factors affecting for :- 7
 - i) Dielectric strength.
 - ii) Arc Resistance.
5. a) Discuss in detail the volume resistivity and surface resistivity of polymers with the help of suitable examples. 6
- b) Explain the test procedure, significance and factors affecting the dielectric constant of polymeric material. 7

OR

6. Explain in detail the test procedure, significance and factors affecting the following properties :- 13
i) Hardness. ii) Abrasion Resistance.

SECTION – B

7. Explain in detail the procedure, significance and factors affecting on following test method of polymers :- 14
i) Refractive Index. ii) Heat Deflection temperature.

OR

8. Explain in detail the test procedure, significance and factors affecting the followings :- 14
i) Environment stress crack Resistance (ESCR).
ii) Vicat softening point.

9. Explain with examples, the aspects of following with properties during product design with plastics :- 13
i) Temperature. ii) Weathering.
iii) Elasticity. iv) Impact strength.

OR

10. a) Discuss the importance of polymer material for designing of plastic product. 6
b) Explain the aspect of chemical wear and permeability during product design of plastics. 7
11. a) Discuss in detail the significance of runner system and gate positioning in plastic product designing. 6
b) Explain the aspects of following while designing plastic products. 7
i) Ribs and bosses. ii) Moulded holes

OR

12. a) What do you mean by parting line? Give its design aspect during product design with plastics. 7
b) Discuss in detail the effect of processing parameter on structure, property and quality of plastic products. 6
