

11148 : Professional Elective-II : Testing & Product Design for Plastics : 8 PP 03

P. Pages : 2

Time : Three Hours

**AW - 3507**

Max. Marks : 80

- Notes :
1. All question carry marks as indicated.
 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 pen Blue/Black ink/refill only for writing the answer book.

SECTION - A

1. a) How will you select the polymers on the basis of strength and stiffness? Also derive the equation for desirability factors. 7
b) Explain in detail the difference between metals and polymers. 7

OR

2. a) What are the types of fracture? Explain in detail the Griffith's theory of fracture. 7
b) Discuss the stress-strain curve for following plastic material:- 7
i) Polyacetal ii) Polycarbonate
iii) PTFE iv) Polypropylene
3. Explain the followings with its test procedure and significance and also discuss in short the factors affecting on it. 13
i) Flexural strength ii) Tensile strength.

OR

4. a) Explain in detail the test procedure, significance and factors affecting for Arc Resistance. 7
b) Discuss the concept of tensile creep and fatigue in plastics with the help of suitable example. 6
5. Explain in detail the test procedure, significance and factors affecting the following properties:- 13
i) Hardness ii) Abrasion Resistance.

OR

6. a) What is the selection criteria of any plastic material to act as an insulator? Discuss the test procedure and significance of Dielectric strength. 7
b) Discuss the concept of dissipation factor and volume resistivity for insulating polymers. 6

7. Explain in detail the procedure, significance and factors affecting on the following thermal properties:- 14
- i) Heat Deflection Temperature (HDT)
 - ii) Thermogravimetric Analysis (TGA)

OR

8. Explain in detail the test procedure, significance and factors affecting on following test method:- 14
- i) Solvent stress crack resistance
 - ii) Refractive Index.
9. Discuss with suitable example the aspect of following properties during product design with plastics:- 13
- i) Flame Resistance
 - ii) Chemical wear
 - iii) Weathering
 - iv) Permeability

OR

10. a) Discuss the selection of material and process selection for designing of plastic edible oil can. 7
- b) Explain the aspect of moisture, odour and taste during plastic product design. 6
11. a) Discuss the aspects of following while designing plastic products:- 7
- i) Ribs and Bosses
 - ii) Undercuts
- b) Discuss the various types of gate. Also give the importance of gate positioning in design of plastic product. 6

OR

12. a) Discuss in detail the effect of processing parameter on structure, property and quality of plastic products. 6
- b) Discuss the runner and runnerless mould system with the help of neat sketch diagram. 7
