

P. Pages : 2

Time : Three Hours

**AW - 3385**

Max. Marks : 80

- Notes :
1. Answer **three** question from Section A and **three** question from Section B.
 2. Due credit will be given to neatness and adequate dimensions.
 3. Diagrams and chemical equations should be given wherever necessary.
 4. Illustrate your answer necessary with the help of neat sketches.
 5. Discuss the reaction, mechanism wherever necessary.
 6. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION - A

1. a) What do you mean by flexibility of polymer chain? Explain various factors affecting flexibility. 7
b) Classify polymers on the basis of chemical constitution. 6

OR

2. a) Explain the practical importance of polymer chain flexibility. 7
b) Discuss the forces affecting internal rotation of polymer chain. 6
3. a) Discuss molecular aggregation and stable state of assemblage in super molecular structure. 7
b) Explain structure of amorphous polymer. 7

OR

4. a) Explain X-ray diffraction pattern for amorphous and crystalline polymers. 10
b) What do you mean by super molecular structure in case of polymer? 4
5. a) Define glass transition temperature and state its significance. 7
b) What does crystallization mean? Explain kinetics of crystallization. 7

OR

6. a) Define equilibrium melting temperature and explain its determination. 7
b) Explain the mechanism of crystallization. 7

SECTION - B

7. a) Explain the morphology of crystalline polymers with suitable example. 7
b) Explain structure of polymer crystallized from morphology. 7

OR

8. a) Explain the effect of spherulites on the properties of polymer material. 7
b) Explain structure formation during polymer processing. 7
9. a) Explain the effect of various factors on crystalline melting point. 7
b) Explain the effect of molecular weight and filler on mechanical strength of polymers. 6

OR

10. a) Explain the effect of chemical constitution and stereo-regularity of polymer on electrical properties of polymer. 7
b) What does mechanical strength and life time of polymer mean? 6
11. a) Discuss the property requirement for elastomers and fibres. 6
b) What does liquid crystalline polymers mean? State its applications. 7

OR

12. a) Explain polymer sorbents and porous structure of polymers. 7
b) State the various applications of polymers in optical and electrical field. 6
