Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (Textile)(2011 Onwards) (Sem.–3)

POLYMER AND FIBRE SCIENCE

Subject Code : BTTE-303

Paper ID : [A2742]

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Answer briefly :

a) How we may decrease the melting point of a polymer?

b) What are the different molecular arrangements possible in a polymer?

c) If a polymer is tough, what should be its structural feature?

d) How copolymerization influences the crystallization in polymers?

e) What are condensation and addition polymers?

f) Which type of polymer will not respond to X-ray?

g) Differentiate between thermoplastic and thermoset polymer.

h) What is the major limitation of bulk polymerization technique?

i) What is average relaxation time in polymer and what is its significance?

j) Is it possible to have a polymer having no T_g? Justify.

SECTION-B

2. Discuss with neat sketch a method of measuring weight average molecular weight of polymer.

3. What are thermoplastic and thermoset polymers and what are the differences in their structural features that are responsible for their specific thermal response?

4. How can we estimate the orientation of molecules in the amorphous regions of a fibre? Is there any correlation between orientation of molecules in the amorphous regions to that of the orientation of crystals in fibres? Justify.

5. Discuss the factors that determine strength of a polymeric material.

6. What decides the selection of a particular molecular weight value of a polymer during polymerization? How can we control molecular weight during polymerization? Explain with examples.

SECTION-C

7. Discuss with a neat sketch the method of determination of degree of crystallinity and orientation of fibre using wide angle X-ray diffraction.

8. Why polymers exhibit rubbery state. Discuss the concept of rubbery state and rubber elasticity.

9. Briefly describe the methods available for polymerisation of vinyl polymers.