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

M.Code : 71655

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) Why T_g is referred to as a second order transition?

b) Is it possible to have an ordered amorphous polymer? Justify.

c) Mention four structural features that influence T_g of a polymer.

d) Can fillers influence the degree of crystallinity of a polymer? Justify.

e) What information we can have from the SEM image of a polymer?

f) If a polymer sample does not give any X-ray pattern, what may the causes for the same?

g) What are the different tactic forms of polymer and how they influence property?

h) Define conformation and configuration.

i) Define glass transition temperature of polymer,

j) Define average relaxation time of polymers.

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. What are the differences in response of an amorphous and a crystalline polymer against external load?

5. 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.

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

SECTION-C

7. With suitable example enumerate the influences of molecular weight and fillers on the mechanical properties of polymers.

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

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

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.