B. Tech.
(SEM. IV) EXAMINATION, 2006-07
FIBRE SCIENCE - II

Time : 3 Hours] [Total Marks : 100

Note : (1) Attempt all questions.
(2) All questions carry equal marks.

1. Attempt any four of the following : 5x4=20

(a) Differentiate ‘condensation polymerization’ and ‘addition polymerization’.

(b) Why both crystalline and Amorphous regions are necessary in a textile grade fibre?

(c) What are the factors affecting wool supply?

(d) Describe the traditional auction system of wool selling.

(e) Discuss with examples, how thermoplastic polymers are different from thermostat polymers?

(f) What are the salient features of a 'fibre forming polymers'?

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2. Attempt any two of the followings: **10×2=20**

   (a) Describe the different steps involved in viscose fibre manufacture.

   (b) Discuss different physical and chemical properties of viscose fibre.

   (c) What are the chemical structures of cellulose acetate, tri-acetate, cuprammonium Rayon and Lyo cell fibres?

3. Attempt any two of the following: **10×2=20**

   (a) Draw both longitudinal and cross sectional view of following fibres:
   
   (i) Polyester
   (ii) Viscose
   (iii) Nylon
   (iv) Acrylic.

   (b) What are the advantages of melt spg. over solution spinning? Discuss the principle of “Extruder”.

   (c) Discuss with examples, ‘Dry spinning’ Vs. ‘Wet spinning’. What are the advantages of one over the other.
4. Attempt any two of the followings: 10x2=20

(a) What are the raw materials for Nylon 6 and Nylon 66. Discuss the chemical reactions involved in Nylon 6 and Nylon 66 formation.

(b) Why do we go for a two step reaction in case of polyester formation? Compare TPA route over DMT route.

(c) Discuss the ‘Wet spinning technique’ used in acrylic fibre formation.

5. Attempt any two of the following: 10x2=20

(a) Discuss different end uses of Nylon fibre with special reference to its properties.

(b) What are the objectives of ‘Texturising’? What type of raw material is suitable for texturising?

(c) What do you understand by “Elastomeric fibres”? Mention the $T_g$ and $T_m$ values for following fibres:
   (i) Polyester
   (ii) Nylon
   (iii) Acrylic
   (iv) PP.