

[Total No. of Questions - 9] [Total No. of Printed Pages - 3]
(2064)

14651

B. Tech 4th Semester Examination

Manmade Fibres (N.S.)

TE-222

Time : 3 Hours

Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : The question paper consists of five sections A, B, C, D and E. The candidates are required to attempt five questions in all selecting one question from each of section A, B, C, D and all the subparts of the questions in Section E.

SECTION - A

1. (a) How MEG can be produced by oxidation and acetoxylation process? (10)
- (b) Discuss briefly about the raw materials for rayons. (5)
- (c) Explain the production of DMT from p-xylene.. (5)
2. (a) How Acrylonitrile can be synthesized from acetylene and propylene? (10)
- (b) State the production of TPA by Amoco process. (5)
- (c) How Caprolactam can be produced from Phenol and Toluene? (5)

SECTION - B

3. (a) Describe the production of Nylon 6 and Nylon 66 with all possible reactions. (10)

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- (b) Explain the design & working of an Extruder. (5)
 - (c) Give a line diagram for polyester staple fibre production. (5)
4. (a) Explain the different polymerization techniques to produce PAN polymer, mentioning the advantages and disadvantages associated with the respective techniques. (10)
- (b) Discuss mechanics of spinning for synthetic fibres. (5)
 - (c) Explain the importance of pre-filtration in melt spinning process. (5)

SECTION - C

5. (a) Explain the role of different ingredients in coagulating bath with reference to spinning of Viscose fibre. (8)
- (b) Discuss about few variants of viscose fibre. (8)
 - (c) How drawing process influence on structure & properties of fibre? (4)
6. (a) Compare wet and dry spinning process with their advantages & disadvantages. (10)
- (b) What is the importance of heat setting on fibre behavior? (3)
 - (c) Explain about the parameters that influence the heat setting. (7)

SECTION - D

7. (a) How flame retardant and antistatic fibres are produced? (6)
- (b) What is bicomponent fibre? How does it differ from bifilament fibre? (8)

- (c) Explain the parameters in polymer testing. (6)
8. (a) How Titanium oxide content is measured in polyester fibre production? (4)
- (b) Explain in detail about the measurement of tenacity and elongation modulus in synthetic fibres. (6)
- (c) Discuss about the shrinkage force of polyester filament. (5)
- (d) Write a brief note on Tencel fibre. (5)

SECTION - E (All questions are compulsory)

9. (a) Give the advantages of man-made fibres over natural fibres.
- (b) Mention few important properties of Lyocell fibre.
- (c) Write moisture content of PET and nylon chips before melt spinning.
- (d) Why TPA route is advantageous over DMT route in PET polymer preparation?
- (e) Define Micro Fibre.
- (f) Write the name of monomers and the chemical from which the monomers for Polyester and Polypropylene are synthesized.
- (g) Give the chemical composition of spin finishes.
- (h) What is 'deashing'?
- (i) What is HOY & FOY and mention the production speeds of the same.
- (j) Why spinning of polypropylene require a longer cooling zone? (10×2=20)