

[Total No. of Questions - 9] [Total No. of Printed Pages - 2]  
(2126)

16235(D) - 0 DEC 2016

**B. Tech 7th Semester Examination**

**High Performance Fibres (NS)**

**TE-411(e)**

**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 :** Attempt five questions in all selecting one question from each of section A, B, C and D. Section E is compulsory.

**SECTION - A**

1. Give a detailed note about the fine structure of Poly (p-phenylene terephthalamide) fibre. (20)
2. Elaborate the characteristic properties of Nomex and Kevlar fibres in view of their high engineering and specific technical applications. (20)

**SECTION - B**

3. Categorize the glass fibres on the basis of their compositions and applications. Also describe the morphological structure of glass E fibre with its properties and applications. (20)
4. Write about the followings:
  - (a) Asbestos, a fibre of natural mineral origin.
  - (b) Manufacturing of Glass wool. (10×2=20)

**SECTION - C**

5. Give and compare the different routes for producing the silicon carbide-based ceramic fibres. (20)

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6. Describe the electrospinning process for the manufacturing of polyurethane fibres with line diagram. Also brief its properties and uses. (20)

**SECTION - D**

7. State the concept of light wave propagation through optical fibres. Discuss the manufacturing process of silica-based optical fibres. (20)
8. Write the manufacturing techniques of hollow fibres. Give the mechanism of liquid absorbency by these fibres. How these fibres are useful for various technical applications. (20)

**SECTION - E**

9. (i) List the advantages of dry-jet wet spinning process over conventional wet spinning method.  
(ii) Brief the applications of Vectran fibres.  
(iii) State about the graded-index polymer optical fibres.  
(iv) How the optical fibres are useful in technical textiles applications?  
(v) Why Lycra fibre shows high elasticity?  
(vi) Carbon fibres are highly conductive, how this property is useful in various technical applications?  
(vii) Ceramic fibres found to be useful for electrical insulation purposes. Why?  
(viii) Give the conditions for PAN fibres carbonization process.  
(ix) Why the gel spinning process is opt to produce UHMWPE fibres?  
(x) Draw the diagram of fine structure for carbon nano tubes. (2×10=20)