

**B.TECH DEGREE EXAMINATIONS: NOV/DEC 2014**

(Regulation 2009)

Sixth Semester

**TEXTILE TECHNOLOGY**

TTX117: High Performance Fibers

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 1 = 10 Marks)**

- Aramids are prepared by the generic reaction between an amine group and
  - carboxylic acid halide group
  - phenylenediamine group
  - ester group
  - glycol
- Helmets, tank panels and other military devices are reinforced by
  - Meta-aramids
  - Glass
  - Carbon
  - Para-aramids
- UHMW-PE material is chemically identical to
  - Polyethylene
  - high-density polyethylene
  - Aramid
  - polyester
- HPPE fibres have a density of
  - 1970 to 1980kg/m<sup>3</sup>
  - 870 to 880kg/m<sup>3</sup>
  - 970 to 980kg/m<sup>3</sup>
  - 2970 to 2980kg/m<sup>3</sup>
- Carbon fibres are generally manufactured by ----- & ----- treatment
  - melting & decomposition
  - acylation & melting
  - diamine & acylation
  - pyrolysis & thermal
- In cut resistance the best protection is achieved when high-performance fibres are combined with
  - glass fibres
  - Polyester fibre
  - Carbon
  - Sulphur fibre



22. a) (i) With a neat diagram, explain the manufacturing technique of pitch based PAN fibre. (7)  
(ii) Discuss the chemical and physical properties of glass fiber. (7)

**(OR)**

- b) (i) Compare the process sequence of production of pitch and rayon based PAN fiber. (7)  
(ii) Explain the manufacture of glass fiber with a neat diagram. (7)

23. a) (i) Explain the ceramic fiber formation techniques with a neat sketch. (7)  
(ii) Compare and contrast the properties of ceramic and PBI fibers. (7)

**(OR)**

- b) (i) Describe the manufacturing process of polyurethane fiber. (7)  
(ii) Distinguish the applications of ceramic, PBI and elastomeric fibers. (7)

24. a) (i) Explain the manufacturing process of aluminium oxide fiber. (7)  
(ii) Discuss the structure of polyphenyl sulphide and lead fiber. (7)

**(OR)**

- b) (i) Explain the procedure involved in production of polyphenyl sulphide fiber. (7)  
(ii) Discuss the properties of composites made of metallic fibers. (7)

25. a) (i) Describe the production of PLA fiber and its applications. (7)  
(ii) Discuss the properties and structure of hollow fiber. (7)

**(OR)**

- b) (i) Explain the manufacturing of silica fiber with a neat sketch. (7)  
(ii) Compare the applications of ultra-fine and nano fibers and their importance. (7)

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