

CS/B.TECH(TT)/SEM-6/TT-606A/2012

2012

**TECHNICAL TEXTILES**

*Time Allotted : 3 Hours*

*Full Marks : 70*

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

**GROUP – A**

**( Multiple Choice Type Questions )**

1. Choose the correct alternatives for the following :  $10 \times 1 = 10$

i) Fabric structure most suitable for filtration is

- a) plain woven
- b) twill fabric
- c) satin weave
- d) melt blown non-woven.

ii) The common fibre used for artificial lung

- a) Hollow PP b) Collagen
- c) Kevlar d) Hollow viscose fibre.

iii) Choice of glass fibre for textile fibre reinforced composite influenced by

- a) high strength to weight ratio
- b) low strength to weight ratio
- c) high density
- d) low moisture regain.

iv) Permittivity of a geotextile material is related to

- a) flow of water in in-plane direction
- b) flow of water in cross direction
- c) in radial direction
- d) in multidirection.

v) AOS  $d_{90} = 200$  microns of a geotextile fabric means

a) 90% of the pores of the geotextile fabric having diameter = 200 micron

b) 90% of the pores of the geotextile fabric having diameter  $\geq 200$  micron

c) 90% of the pores of the geotextile fabric having diameter  $\leq 200$  micron

d) 10% of the pores of the fabric having diameter = 200 micron.

vi)  $V_c$  or  $V_o$  critical velocity of a ballistic fabric defined as

a) highest velocity at which no penetration occurs at all

b) highest velocity at which fabric fails

c) highest velocity at which the fabric burns

d) none of these.

vii) Geotextile fabric are generally black or grayish steel in colour due to the presence of

a) UV protector

b) anti-microbial agent

c) chemical resistive agent

d) none of these.

viii) Fibre generally used in airbag is

a) Polyester b) PP

c) Nylon66 d) Aramid.

ix) Collagen fibre is used for

a) vascular grafting b) contact lenses

c) artificial kidney d) crape bandage.

x) Fibre for vascular graft

a) PTFE b) Nylon

c) PLA d) Chitin.

### **GROUP – B**

#### **( Short Answer Type Questions )**

Answer any *three* of the following.  $3 \times 5 = 15$

2. a) Define the term 'geosynthetics'.

b) Mention the members of geosynthetic family in brief.

2 + 3

3. Discuss about the selection criterion of different fibres in textile filtration.

4. Explain the properties of Auto-interior fabrics.

5. What is fogging ? What are factors causing fogging ?

6. a) What are the factors to be considered during selection of the reinforcing materials for rigid composite ?

b) What are the different use of composite in sports items ?

3 + 2

7. Define biodegradability and non-biodegradable medical fibre with suitable example.

### **GROUP – C**

#### **( Long Answer Type Questions )**

Answer any *three* of the following.  $3 \times 15 = 45$

8. a) Define Technical textile.

b) What are the application areas of technical textile ?

c) Prepare a comparative table for selection of the following fibres used in technical textile :

i) PP ii) Polyester iii) Carbon iv) Alginate.

d) What are the other nomenclatures of technical textile ?

2+ 3 + 8 + 2

9. a) Discuss about the hydraulic property of geotextile.

b) What are the different important hydraulic properties

for filtration and separation function ?

c) State the use of geotextile materials for Slope management and road construction. 6 + 3 + 6

10. a) Explain the concept of 3-layer structure of advance wound care product.

b) What are the basic selection criteria of textile material for medical implantation ?

c) Why alginate fibre is a smart wound care manager ?

d) Define resorbable fibre.

e) What are the different characteristics of sutures ?

3 + 3 + 3 + 2 + 4

11. a) What are the basic requirements of protective cloths ?

b) What are the factors influencing the efficiency of Ballistic Protective Cloth ?

c) What are the different fibres used for construction of chemical protective cloth ?

d) Elaborate the 3-layer structure for chemical protective cloth. 5 + 3 + 3 + 4

12. a) What are the important characteristics (properties) of sport fabric ?

b) Prepare a comparative table of advantages of different fibre and fabric structure used in sports on the basis of application area.

c) What is basic property requirement of active swim wear fabric ? 4 + 9 + 2

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