



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/M.TECH (MTT/MCP)/SEM-2/MTT-201/2013  
2013**

**HIGH PERFORMANCE FIBRE AND INDUSTRIAL  
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.*

Answer any *five* questions.  $5 \times 14 = 70$

1. a) Briefly discuss the UHMWPE fibre manufacturing process by 'Gel-spinning' technique. 7
- b) "Ordinary polyethylene fibre is difficult to use in apparel application. But polyethylene fibre made from ultra-high molecular weight polyethylene polymer can use for bullet proof vests." Explain the statement. 5
- c) Give atleast three application of UHMWPE fibre. 2
2. a) Briefly discuss the glass fibre production process. 7
- b) Write the names of different types of glass fibre found in market and their nature. 5
- c) Make a chart on application of glass fibre. 2



3. a) Explain degree of order and degree of orientation by representative model. 5
- b) From the above which one has more impact on tensile properties of fibre ? Explain. 4
- c) Make a comparative study on commodity fibre-forming polymeric chain and rigid rod polymeric chain. 5
4. a) “Kavlar fibre has more thermal and chemical resistance and also mechanical strength.” Justify the statement. 5
- b) Why PEEK fibre shows chemical inertness ? 5
- c) Write atleast three application of each fibre. 4
5. a) What are the main functions of wound dressings products ? 7
- b) Discuss in detail about the classification of modern wound dressing product. 7
6. a) Explain ‘Moist environment is most suitable for wound healing’. 4
- b) Discuss in detail about ‘two speciality fibre’ used in medical textile. 3 + 3
- c) Why collagen fibre is the main load bearing part of connective tissue ? 4
7. a) Explain the process of soil consolidation based on an ‘idealised system composed of a SPRING’ with schematic diagram. 5
- b) Give the mathematical model of separation function of geotextile material used for road construction. 4
- c) Explain ‘Blinding and Clogging’ of geo-textile material. 2
- d) What are different types of drain used for geo-technical application ? 3



8. a) What are basic selection criterion for protective textile / fabric / fibre ? 3
- b) Give detail schematic of diagram of materials and technologies for manufacturing protective textiles. 4
- c) What are the comfort and survival factors in cold protective clothing ? 4
- d) Give the structural model of a cold weather protective clothing. 3

=====