Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/M.TECH(TT & CPT)/SEM-2/MTT-201/2012

2012

HIGH PERFORMANCE FIBRES & 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 Question No. *1* from group - *A*, any *two* from *Group - B* and any *two* from *Group - C*.

GROUP – A

1. a) Briefly discuss the influence of 'degree of order' and 'degree of orientation' on the physical, mechanical and chemical properties of fibre.

   b) Prepare a comparative table showing the advantages and disadvantages of the different fibres used for making tier. 7 + 7 = 14

GROUP – B

Answer any *two* of the following. 2 × 14 = 28

2. a) What do you know about UHMWPE fibre ?

   b) What are the basic differences between ordinary PE fibre and UHMWPE fibre ?

   c) Write the spinning technique by which the fibre is made.

   d) Briefly discuss the manufacturing process of the UHMWPE fibre. 2 + 3 + 2 + 7

3. a) Explain the fine structural difference between PAN based carbon fibre and graphite fibre with proposed models.

   b) What are the precursors or feed stock generally used for production of carbon fibre ?

   c) Briefly discuss the different steps, process parameters and chemical changes of production of carbon fibre using PAN as feed stock.

   d) Make a list on different applications of carbon fibre.

   3 + 2 + 7 + 2

4. a) Suppose you want to make a composite for aircraft, what should be the key attributes in component fibre to fulfil the requirement ?

   b) What are the key attributes should be in tyre cord fabric so that it can be used for aircraft tyre ?

   c) Which fibre do you think will be suitable for the above applications ? Justify your answer.

   d) Make a list of different types of glass fibres and discuss their mechanical and chemical properties.

3 + 3 + 3 + 5

GROUP - C

Answer any *two* of the following : 2 × 14 = 28

5. a) Give the detail classification of wound.

   b) Prepare a comparative table mentioning the advantages of different wound dressing materials (fibres) on the basis of wound appearance.

   c) What are the basic criterion's of selection as an appropriate wound care product ? 4 + 7 + 3

6. a) What are the essential properties of textile fibre for use in rubber industry ?

   b) Identify the different application areas of rubberized fabric. 10 + 4

7. a) How does the rubber to textile adhesion strength can be achieved ?

   b) Give the detailed compositional breakdown (by weight) for a typical automotive tyre.

   c) Explain 'viscose fibre has low wet strength'. 9 + 3 + 2

8. a) What is PCM (Phase Change Material) ?

   b) Explain the working principle of PCM.

   c) What are the different types of PCM ?

   d) How does PCM work in cloth comfort ? 2 + 3 + 5 + 4