

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.

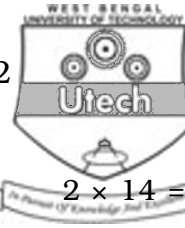
GROUP – A

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

30090(M.TECH)

[Turn over



GROUP – B

Answer any *two* of the following. $2 \times 14 = 28$

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.

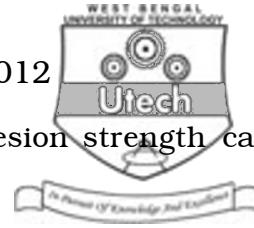
3 + 3 + 3 + 5

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

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



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

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