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RM-6585

B. E. - II (Sem. IV) (TT & P) Examination

May / June – 2010

Fibre Physics

Time : **3** Hours] [Total Marks : **100**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. E. 2 (Sem. 4) (TT & P)**

Name of the Subject :

☛ **Fibre Physics**

☛ Subject Code No. : **6 5 8 5** ☛ Section No. (1, 2,.....) : **1&2**

Seat No. :

Student's Signature

(2) Answers to the **two** sections must be written in **separate** answer books.

(3) Figures to the right indicate full marks.

(4) Tie **two** sections **separately**.

SECTION - I

1 (a) State True or False : **10**

(i) NMR Technique measures Matrix Rigidity.

(ii) Asbestos fibre shows perfect crystalline structure.

(iii) Standard moisture regain of cotton fibre is 2%.

(iv) Standard atmosphere means maintaining a Relative Humidity of $\pm$85%.

(v) Cortical cells are present in wool fibre.

(vi) Hydrogen bonds are formed between distances less than 0.5 nm.

(vii) Degree of order gives an idea of crystallinity of the fibre.

(viii) Heats of sorption can be measured using a calorimeter.

(ix) The cross section of cotton fibre is bean shaped.

(x) Fibrils are seen in the Electron Micrograph of cotton fibre.

(b) Explain in detail the gross morphology of cotton fibre. **10**

2 (a) Explain in detail the physical and chemical properties of silk fibre. **10**

(b) Explain in detail the microscopic appearance of silk fibre. **5**

OR

2 Explain in detail the X-ray diffraction with neat diagrams. **15**

3 Write short notes on any **three** : **15**

(i) Heats of sorption

(ii) Moisture Regain and Temperature

(iii) Fibre Density

(iv) IR spectroscopy.

SECTION - II

4 (a) Fill up the blanks : **5**

(i) The temperature of rapid contraction may be used as a means of _____.

(ii) The acrylic fibre has a large transition at about ____^{o}C, which causes a very large decrease in stiffness.

(iii) _____ may be used as a measure of orientation in the fibre.

(iv) _____ is the most important factor in determining the resistance of textile materials.

(v) Unit of stress is _____.

(b) Discuss the factors determining the results of Tensile experiments. **6**

(c) Define the terms : **4**

(i) Specific stress

(ii) Specific work of Rupture

5 (a) Discuss the effect of frequency and moisture on the dielectric properties. **10**

(b) Explain mounting of yarn for measurement of resistance. **5**

OR

5 (a) Explain the problems of static electricity. **10**

(b) Discuss in brief conditioning of specimen for measurement of resistance. **5**

6 (a) Write short notes on (any **three**) **15**

(i) Lustre

(ii) Fibre friction and its importance

(iii) Creasing

(iv) Effect of orientation on mechanical properties.
