16061(J)   June-16

B. Tech 4th Semester Examination

Properties of Fibre (NS)

TE-221

Time : 3 Hours   **Max. Marks : 100**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five question in all, selecting one question from Sections A, B, C and D. Section E is compulsory.

SECTION - A

1. Explain following types of bonds and effect on properties of fibres.

    (a) Covalent bond.   (b) Ionic bond.

    (c) Vander walls forces.   (d) Hydrogen bond.   (20)

2. What is principle of x-ray diffraction? How it is useful for predicting structure, crystallinity & orientation? Explain with examples.   (20)

SECTION - B

3. (a) What is importance of heat of sorption?   (10)

    (b) Explain theory of Moisture Absorption.   (10)

4. (a) Why friction is necessary? Differentiate between static and kinetic friction.   (10)

    (b) Derive relation between moisture regain and moisture content.   (10)

SECTION - C

5. Define creep. Explain primary and secondary creep with the help of diagram & examples.   (20)

6. (a) What is effect of fibre properties on dielectric properties of fibre?   (10)

    (b) Explain effect of structure of fibres on elongation of fibres.   (10)

SECTION - D

7. Define and explain importance of:

    (i)   Birefringence   (ii)   Refractive Index

    (iii) Dichroitic Ratio   (iv)   Diffuse & Specular Reflection
                                                            (20)

8. (a) What is importance of static charge in textile industry? Which problem are likely to occur due to static charge?
                                                            (10)

    (b) Explain structural change during primary and secondary transition.   (10)

SECTION - E

9. (i)   Importance of Spot & Arc in x-ray diffraction.

    (ii)   Fringed Micelle Theory.

    (iii) Degree of order.

    (iv)   Direct & indirect attached water molecules.

    (v)   Hysteresis of moisture absorption.

    (vi)   Work factor.

    (vii) Specific work of rupture.

    (viii) Constant rate of loading testers.

    (ix)   Measurement of static charge.

    (x)   Glass transition temperature.   (10×2=20)