



Register Number:.....

B.TECH DEGREE EXAMINATIONS: MAY 2015

(Regulation 2009)

Fifth Semester

TEXTILE TECHNOLOGY

TTX112: Structure and Properties of Textile Fibres

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

- The _____ gives evidence of the presence of α and β forms of protein molecules in the non-crystalline regions of protein fibres.
 - X-ray diffraction
 - NMR
 - Optical diffraction
 - Infrared spectrum
- In X-ray diffraction pattern, the broadening of the spots into arcs shows a _____.
 - Increase in the degree of orientation
 - Increase in the crystallinity
 - Decrease in the degree of orientation
 - Decrease in the crystallinity
- The relation between Moisture Content (M) and Moisture Regain(R) is expressed by the relation_____.
 - $M=R((1+R)/100)$
 - $M = (1+R)/100$
 - $R = M((1+M)/100)$
 - $R = (1+M)/100$
- The rate of transport, dm/dt , of the diffusing substance across an area A of a plane perpendicular to the concentration gradient $\delta c/\delta x$ is given by Fick's equation_____, where D is diffusion coefficient.
 - $dm/dt = DA (\delta c/\delta x)$
 - $dm/dt = -DA /(\delta c/\delta x)$
 - $dm/dt = -DA (\delta c/\delta x)$
 - $dm/dt = DA / (\delta c/\delta x)$
- _____ is also called as toughness.
 - Specific work of rupture
 - Work of rupture
 - Specific strength
 - Specific stress
- _____ is a measure of the resistance to extension for small extensions.
 - Young's modulus
 - Tensile modulus

- b) (i) Discuss briefly the morphological structure of cotton fibre with a neat sketch. (7)
(ii) Elaborate the investigation of fibre structure using Electron microscopy method. (7)
22. a) (i) Discuss briefly the moisture regain behavior of natural and manmade fibres with the help of curves. (7)
(ii) Calculate the Moisture Regain and Moisture Content of Cotton / Viscose Blend which is having 60% cotton and 40% Viscose in proportion. (7)
- (OR)**
- b) (i) Elaborate the mechanism of conditioning and factors influencing rate of conditioning. (7)
(ii) Discuss the hysteresis effect in moisture absorption. (7)
23. a) (i) Explain briefly the stress-strain behavior of various textile fibres with the help of curves. (7)
(ii) Elaborate the measurement technique of torsional rigidity with neat sketch. (7)
- (OR)**
- b) (i) Explain briefly the elastic recovery behavior of various textile fibres with the help of curves. (7)
(ii) Discuss the advantages associated with mechanical conditioning of fibres. (7)
24. a) (i) Explain the measurement technique of birefringence. (7)
(ii) Discuss the relationship between optical orientation factor, refractive index and birefringence. (7)
- (OR)**
- b) (i) Discuss the significance of Dichroism and dichroic ratio in the textile fibre. (7)
(ii) Elaborate the various factors influencing lustre and lustre index. (7)
25. a) (i) Explain briefly the generation of static charge and its measurement technique. (7)
(ii) Discuss the problems encountered due to static electricity in various textile processes. (7)
- (OR)**
- b) (i) Elaborate the electrical resistance behavior of various textile fibres. (7)
(ii) Explain the different thermal transitions occurring in thermoplastic fibres. (7)
