Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV • EXAMINATION – WINTER 2013

Subject Code: 142802 Date: 23-12-2013

Subject Name: Fibre Physics

Time: 02:30 pm to 05:00 pm Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** Answer the following OBJECTIVE questions: **07**

i. Minimum distance required for formation of vander waal's forces is _____.

ii. Name any two fibre containing salt linkages in their polymer system.

iii. The idea of extensibility of any of fibre is denoted by the quantity _____.

iv. Define "Birefringence".

v. State two types of humidity.

vi. Orientation of fibre has no effect on its mechanical properties. True/False.

vii. Maturity of the cotton fibre is judged by the thickness of _____.

(b) Discuss the techo-physical aspects of various physical and chemical properties of cotton fibres. **07**

Q.2 **(a)** Show the fine structure of wool fibre with description of each part in detail. **07**

(b) Mention tensile properties of various textile fibres by their stress-strain curves. **07**

OR

(b) Introduce dielectric properties in context to textile fibres. Also enlist various factors affecting it. **07**

Q.3 **(a)** Describe the gross morphology and polymer system of silk fibre. Also write about different physical properties of it. **07**

(b) Define "swelling". Give methods of measurement of different types of swelling. **07**

OR

Q.3 **(a)** Elaborately discuss any one method to investigate fine structure of fibres. **07**

(b) Explain the following terms: **07**

i. Thermal Conductivity

ii. Thermal Expansion

Q.4 **(a)** Explain various factors influencing electrical properties of fibres. **07**

(b) Summarize static electricity to understand its relation with textile fibres and their properties. **07**

OR

Q.4 **(a)** Enlist inter and intra molecular forces of attraction present in fibre polymer system. Describe any two in detail. **07**

(b) Discuss the correlation between reflection and luster in depth. **07**

Q.5 **(a)** Discuss the relation of absorption with dichroism in detail to describe optical behaviour of fibres. **07**

(b) Write a vast note on Thermal transitions of textile fibres. **07**

OR

Q.5 **(a)** Depict various physical and chemical properties of nylon fibres in context to their structure. **07**

(b) Show the effect of orientation on mechanical properties of regenerated fibres elaborately. **07**

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