

Mansoura University	 <b>Textile Physics (1)</b>	First Year( Code TXE 6125)
Faculty of Engineering		May 2014 ( // /6/2014)
Textile Engineering Dept.		Time: 3 hours (100 Marks)

Answer the following questions:

1) A - Classify the fibres used in the textile industry according to the origin of fibre and according to its material. Give examples in each case.

B - Define: (cotton fibre maturity – moisture regain –moisture content – fibre fineness).

[20 Marks]

2) A - Draw the relationship between moisture regain and relative humidity for the following textile materials:

(wool — nylon – cotton – viscose rayon)

B – What is the importance of testing fibre length?

[20 Marks]

3) A - Explain an instrument for measuring fibre fineness.

B – Explain the mechanism of water absorption.

[20 Marks]

4) A - The density of a dry wool fibres is  $1.30 \text{ mg/mm}^3$  and when fibres gained 6% moisture content the density increased to  $1.33 \text{ mg/mm}^3$ , if the dry weight of fibres equals to 100 g. Calculate:

- i. The increase in volume of these fibres.
- ii. The percentage volume swelling of these fibres.

B – What is meant by maturity, maturity ratio and maturity index? What is the importance of the maturity of cotton fibre to the spinner?

[20 Marks]

5) A-Explain how to use the " Shirley Comp Sorter " for determination of :effective length, % age short fibres, dispersion and staple length.,

[ 10 Marks ]

B- In one condition a particular fibre sample weighs 6 grams and has a moisture content of 5.4 %. At another condition the sample weighs 8.5 grams. What is the moisture regain in the second condition.

[ 10 Marks ]

With my best wishes  
H. A. Abou-Taleb  
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