



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF TEXTILE TECHNOLOGY

END OF SECOND SEMESTER EXAMINATIONS - MAY 2010

TXT 1203 - TEXTILE FIBROUS ASSEMBLES

TIME: 3 HOURS

TOTAL MARKS: 100

INSTRUCTIONS

Answer **ALL** questions from Section A and **ANY 3** from Section B. Section A carries 40 marks and each question in Section B carries 20 marks'

The first fifteen minutes should be spent reading the question paper and making notes

Do not open your answer sheet until told to do so.

Marks will be awarded for skill in appreciating the scope of questions, clarity of argument and conciseness of presentation as well as for the knowledge displayed by the candidate.

SECTION A

QUESTION 1

- (a) Explain or define the following terms
- (i) Microfibers
 - (ii) Denier
 - (iii) Staple fibre
 - (iv) Homopolymer
 - (v) Keratin (5)
- (b) Briefly describe the production of Cuprammonium rayon (5)

QUESTION 2

There are two ways to produce microfibers of the continuous filament type that is, direct spinning and conjugate spinning. Briefly discuss these processes citing their advantages and disadvantages. (10)

QUESTION 3

- (a) What is a fibre? (1)
(b) What is meant by degumming? Describe the nature of silk fibres and state the uses of the fibre. (5)
(c) What is the effect of mineral acids and organic solvents such as metacresol and trichloromethanol on nylon 6? (4)

QUESTION 4

- (a) How is cystine oxidized to cystic acid in wool? (5)
(b) How are disulphide groups in wool reduced by thioglycolic acid? (5)

SECTION B

QUESTION 5

- (a) With the aid of equations, explain the difference in the preparation of nylon 6.6 and nylon 6 fibres from raw materials. (15)
(b) Wool's moisture absorption is one of its most important characteristics. Explain. (5)

QUESTION 6

- (a) Write down the acetylation reaction that leads to the production of triacetate. (10)
(b) Give two examples of aramid fibres. Identify the application areas for each and the relevant fibre characteristics utilized in those areas. (10)

QUESTION 7

Give a detailed description of both primary and secondary fibre properties necessary for a polymeric material to make an adequate fibre. (20)

QUESTION 8

- (a) Discuss the production of viscose rayon. (10)
(b) Distinguish the structural differences between viscose rayon and cotton fibres (10)

END OF QUESTION PAPER