

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF TEXTILE TECHNOLOGY
END OF SEMESTER EXAMINATIONS JUNE 2004
YARN TECHNOLOGY 1 TXT 1207
TIME: 3 HOURS

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.

SECTION A

Answer **ALL** questions in this section.

1. What are the objectives of carding? (5 marks)
2. What is the importance of intermediate feed on the woollen tandem cards? (3 marks)
3. (a) Calculate the denier for a yarn weighing 5g and 450m long. (2 marks)
(b) A spool of 50 tex nylon weighs 35g. What is the length of the yarn on the spool? (3 marks)
4. Calculate the draft on a drawframe when 6 slivers of 15 kilotex are fed to the machine and producing an output sliver of 10 kilotex. (5 marks)
5. What are the objectives of combing? (2 marks)
6. In a card where are the most impurities removed? Show with the aid of a diagram (5 marks)
7. What is the difference between staple length and fibre length? (2 marks)
8. Define humidity. (2 marks)
9. (a) What is fibre fineness and how does it affect yarn properties and processing? (3 marks)
(b) Define a nep. (2 marks)
(c) What are the functions of aprons on the speedframe? (2 marks)
10. What are the objectives of texturising synthetic yarns? (4 marks)

SECTION B

Answer 3 questions

1.
 - (a) Draw a diagram of a typical staple roller drafting system and show the relationship between partial draft and total draft. (10 marks)
 - (b) Draw a diagram of typical wet continuous filament production system. Briefly describe the method of yarn production giving examples of fibres produced this way and typical chemical used to dissolve the polymers. (8 marks)
 - (c) Why is it not possible to melt extrude polyacrylonitrile polymer? (2 marks)
2. Draw a diagram of a typical roller and clearer card used for processing wool. Briefly describe the carding action, blending and how fibres are transferred from one roller to another. (20 marks)
3.
 - (a) What is the typical weight of a commercial bale of cotton? Describe briefly two types of ginning machines and state the advantages and disadvantages of each. (10 marks)
 - (b) Describe how twist insertion is accomplished on the ring spinning frame and how yarn is wound onto the package. (7 marks)
 - (c) What is the function of twist in roving and yarn? (3 marks)
4.
 - (a) Describe four methods of producing textured yarns explaining the principle involved in achieving the desired effects. (8 marks)
 - (b) Describe the principle of Dref/Friction spinning system and state the differences between Dref 1, Dref 2 & Dref 3. (8 marks)
 - (c) What are the objectives of the following processes:
 - carding
 - drawing & doubling(4 marks)
5.
 - (a) Describe three methods of removing wool impurities. (6 marks)
 - (b) With the aid of a diagram describe the operation principle of a rotor spinning frame stating the drafting principle involved. (8 marks)
 - (c) What are the advantages of the above spinning method? (2 marks)
 - (d) Briefly discuss card clothing used in the carding machines, stating the effects of the ability to remove impurities and the effects on the fibre properties. (4 marks)

END OF QUESTION PAPER
