

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF TEXTILE TECHNOLOGY

FINAL EXAMINATIONS MAY 2005

YARN TECHNOLOGY 1 TXT 1207

TIME: 3HOURS

INSTRUCTIONS

Answer all Questions in Section A and ANY 3 from Section B. Section A carries 40 marks and each question in section B carries 20 marks. Allocate 60 mins to section A and 90 mins to section B.

SECTION A – answer all questions in this section

1. State 3 methods of removing impurities from wool. (3 marks)
2. Name the 4 carding actions of the woollen system. (4 marks)
3. Draw a 3 roller drafting system indicating how the passage of the sliver relates to the roller speed. (4 marks)
4. What is texturing. Give 2 examples of 2 techniques. (4 marks)
5. Which characteristics does drawframe doubling improves. (4 marks)
6. What are the objectives of ginning. (4 marks)
7. What is the function of twist? (3 marks)
8. State 3 methods of preparing flax and explain the functions of each system. (5 marks)
9. Which 2 methods are used to render the solid polymer into liquid in order to produce filament. (3 marks)
10. (a) Calculate the tex for a yarn weighing 10 g and 500 m long. (3 marks)
(b) Calculate the draft on a drawframe when 8 slivers of 20 kilotex each are fed to the machine to produce an output sliver of 15 kilotex.(3 marks)

SECTION B

1.
 - (a) Summarise the open end spinning process. (6 marks)
 - (b) Discuss the advantages and limitations of open end spinning for the manufacturer. (5 marks)
 - (c) Describe how twist insertion is accomplished in ring spinning (4 marks)
 - (d) Discuss the differences in yarn quality between open end and ring spun yarns. (4 marks)
2.
 - (a) Draw a diagram of a typical wet spun filament production system. Briefly describe the method of yarn production giving examples of the fibres which are produced this way and a typical chemical used to dissolve the polymers. (10 marks)
 - (b) Give the 3-step principle of filament formation. (5 marks)
 - (c) How does dry spinning differ from wet and melt spinning? (5 marks)
3.
 - (a) Why are traditional staple spinning systems no longer restricted to their original intended fibre types. (8 marks)
 - (b) What are the advantages of using Man Made Fibre blends in spinning systems. (6 marks)
 - (c) How can the use of Man Made Fibres improve blending. (6 marks)
4.
 - (a) State 3 factors which determine the types of wool fibres to be used for yarn production. (6 marks)
 - (b) Outline the differences between the processes for removing impurities from:
 - (i) cotton
 - (ii) wool(6 marks)
 - (c) Discuss the term carding as it relates to a stationary flat card and a woollen card. (8 marks)
5.
 - (a) State 2 methods of converting top to tow. With the aid of a diagram describe one of these operations. (8 marks)
 - (b) What is the function of an Auto Levelling device and how does it improve drafting. (5 marks)

- (d) Explain briefly how and in which process the following is achieved during spinning:
- (i) fibre separation
 - (ii) fibre alignment
 - (iii) regularising
 - (iv) attenuation
 - (v) twisting
- (7 marks)

END OF QUESTION PAPER