

**NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF TEXTILE TECHNOLOGY
END OF SECOND SEMESTER EXAMINATIONS MAY 2008
COURSE TITLE: Txt 2220 Yarn Analysis**

TIME: 3 HOURS

INSTRUCTIONS

Answer Questions 1 and any Three Questions. Each full question carries 25 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.

Q1

- a) What is the function of twist in yarns. State what precautions must be taken during twist determination to ensure that reliable results are obtained. [10]
- b) With the aid of an idealised elements of a yarn diagrams, derive the twist factor formula. [5]
- c) A 25tex yarn is spun with a twist factor of 30. how many turn/cm are there in this yarn.[5]
- d) If a yarn of 36 tex has 5 turns/cm, will its degree of twist 'hardness' be greater or less than that of the 25 tex yarn in 4c.[5]

Q 2

Outline the procedure you would follow to introduce a system of Quality Control in an efficiently operated spinning mill. (25)

Q 3.

- a) Discuss the causes and effects of yarn hairiness and identify factors that influence the degree of hairiness in both ring-spun and rotor-spun yarns. (15)
- b) Describe one instrument used to measure yarn hairiness.(10)

Q 4.

- a) Discuss the use of data from fibre tensile testing equipment in the prediction of the tensile properties of yarns [10]
- b) With the aid of a diagram describe the principle of operation and explain the usual test procedure required to obtain the mean tensile strength of a yarn sample on the tester chosen. [15]

Q 5.

Irregularity in terms of variations in mass/unit length occurs in all spun yarns.

- a) Discuss the origins and causes of yarn irregularity and describe the importance of each processing stage in terms of its contribution to the total irregularity spectrum.[15]
- b) With the aid of a line diagram describe the principle of operation of the Uster Evenness tester. [10]