

THE OPEN UNIVERSITY OF SRI LANKA
CERTIFICATE IN INDUSTRIAL STUDIES
TTI2230 – INTRODUCING TEXTILES
FINAL EXAMINATION - 2007/2008
DURATION: THREE HOURS



Date: 17th May 2008

Time: 0930 –1230 Hrs

Total Number of questions = 10

Number of questions to be answered = 06

Answer question No.1, which is compulsory and five (05) more questions.

Question 1 carries twenty five (25) marks and questions 2 to 10 carry fifteen (15) marks each.

(01) Compulsory Question

- (a) What do you understand by 'filaments'? (02 Marks)
- (b) Name three (03) types of man-made fibres. (03 Marks)
- (c) What are the three (03) basic weaves? (03 Marks)
- (d) Draw a complete diagram of a knitted stitch and label its parts. (03 Marks)
- (e) What are the two (02) main stages involved in manufacturing of non-wovens? (02 Marks)
- (f) What are the three (03) important fabric dimensional properties? (03 Marks)
- (g) Calculate the linear density in tex count of a yarn, if the 4000m of the yarn weighs 88g. (02 Marks)
- (h) State four (04) methods that can be used to identify textile fibres. (04 Marks)
- (i) Give one fibre type each suitable to be dyed with the following dye types. (03 Marks)
(1) Direct dyes (2) Acid dyes (3) Basic dyes

(02)

- (a) Briefly explain the following fibre materials giving a suitable example for each of them: (06 Marks)

- i. Staple fibre,
- ii. Man-made filament fibre and
- iii. Natural filament fibre.

(b) Why are the following requirements of fabrics important for clothing? **(06 Marks)**

- i. Comfort properties,
- ii. Strength and
- iii. Dimensional stability.

(c) Give two (02) specific properties each expected from the material used for following technical textiles. **(03 Marks)**

- i. Safety belts in Automobiles.
- ii. Geotextiles

(03)

(a) What do you understand by the terms 'Warp density' and 'Weft density'? **(04 Marks)**

(b) Draw the point paper presentations of the following weaves.

i. $\frac{2}{1} \frac{1}{2}$ S twill weave. **(04 Marks)**

ii. 2/2 warp rib weave. **(03 Marks)**

iii. 1/3 vertical waved twill weave. **(04 Marks)**

(04)

(a) With the aid of a suitable diagram, briefly explain the principle of "winding". **(06 Marks)**

(b) Explain the three (03) main objectives of "sizing". **(06 Marks)**

(c) Give any three (03) properties to be possessed by a sized yarn. **(03 Marks)**

(05)

(a) Briefly explain the three (03) primary motions and two (02) secondary motions of weaving. **(10 Marks)**

(b) What is "timing diagram" of a loom? **(05 Marks)**

- (06)**
- (a) Briefly explain following terms: **(06 Marks)**
- Face loop and reverse loop,
 - Course density and
 - Stitch density.
- (b) Draw point paper notations to differentiate plain, rib and purl weft knitted structures. **(03 Marks)**
- (c) Compare plain and rib structures with respect to their appearance and stretchability. **(06 Marks)**
- (07)**
- (a) Give three (03) reasons for not using the diameter of a yarn as a measure of its thickness. **(03 Marks)**
- (b) Explain the carding action and stripping action with the aid of suitable sketches. **(06 Marks)**
- (c) State in brief the most important objective of Drawing, Roving and Ring spinning processes? **(06 Marks)**
- (08)**
- (a) Give an in-detail classification of Textile fibres. **(05 Marks)**
- (b) Assign the following fibres in to appropriate categories of your classification: cotton, wool, flax, silk, nylon, viscose, polyethylene, glass, asbestos and coir. **(10 Marks)**
- (09)**
- (a) Give a labelled sketch of a 'winch' dyeing machine. **(05 Marks)**
- (b) Explain how dyeing is carried out in such a machine. **(10 Marks)**
- (10)**
- (a) Write short notes on any three (03) of the following: **(15 Marks)**
- Acid dyes,
 - Melt spinning,
 - Drapability of Fabrics and
 - Colour fastness to laundering.