00054

The Open University of Sri Lanka
Faculty of Engineering Technology
Department of Textile and Apparel Technology

Study Programme	: Advanced Certificate in Industrial Studies
Name of the Examination	: Final Examination
Course Code and Title	**: TAI2530/ TTI2230 Introducing Textiles**
Academic Year	: 2017/18
Date	: **19th January 2019**
Time	: **09:30-12:30hrs**
Duration	: **3 hours**

General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of Nine (09) questions in Four (04) pages.
3. **Answer compulsory question number one (Q1) and any other five (05) questions.**
4. Question number one (Q1) is compulsory and carries 25 marks.
5. Question number two (Q2) to nine (Q9) carry fifteen (15) marks each.
6. Answer for each question should commence from a new page.
7. Answers should be in clear hand writing.
8. Do not use red colour pens.

(Q1) Compulsory question

a. List two (02) basic weave structures. (02 Marks)

b. What are the objectives of **yarn tensioning** during yarn winding. (02 Marks)

c. Draw point paper notations of one repeat of technical front and technical back views of following weft knitted structures.

   a. 1x1 Purl

   b. 1x1 Rib (02 Marks)

d. Briefly explain the two (02) main manufacturing stages of non-woven fabrics. (02 Marks)

e. List four (04) types of open-end spinning methods. (02Marks)

f. Write the properties and characteristics you expect from the following each textile product.
   a. Bed linen
   b. Medical textiles (02 Marks)

g. Mention one (01) example for the following:
   i. Natural filament
   ii. Synthetic filament
   iii. Staple fibre (03 Marks)

h. Draw the cross sectional and longitudinal views of a "regenerated" fibre. (02 Marks)

i. Give one (01) fiber type that can be dyed with each of following dye types.
   a. Direct dye
   b. Reactive dye
   c. Basic dye
   a. Disperse dye (02 Marks)

j. Define the term **'gilling'.** (02 Marks)

k. Draw point paper presentation of $\frac{2\ \ 1}{2\ \ 1}$ twill weave. (02 Marks)

l. What do you understand by "colour fastness" property related to textile materials? (02 Marks)

----------**End of the compulsory question**----------

(Q2) (a) State main preparatory stages of warp yarns and weft yarns for weaving. (05 Marks)

(b) Discuss all the preparatory stages of **warp yarns** for weaving. Use suitable illustrations when necessary. (10 Marks)

(Q3) (a) Explain the three (03) primary motions and the two (02) secondary motions performed by a weaving machine. (10 Marks)

(b) 3.2 meters of polyester yarn weighs 0.027 grams. Determine the **Tex** and The **Denier** counts of this yarn. (05 Marks)

(Q4) (a) Explain two (02) functions of sinkers related to knitting. (05 Marks)

(b) Using suitable diagrams explain five (05) steps of a new loop formation is performed by a **latch needle** in the formation of a **warp knitted** fabric. (10 Marks)

(Q5) (a) Compare the following properties and characteristics of plain knitted fabric with 1x1 rib fabric.

i. Appearance of technical front
ii. Appearances of technical back
iii. Stretchability in course and wale directions
iv. Curling tendency at edges
v. Weight per unit area (09 Marks)

(b) Define the following terms related to warp knitting. Use suitable illustrations when necessary.

i. Swing
ii. Shog
iii. Closed lap
iv. Open lap (06 Marks)

(Q6) (a) State the objectives of each of the following stages of staple yarn manufacturing process.

i. Drawing
ii. Roving (05 Marks)

(b) With the use of suitable diagrams explain the following actions employing in carding.

i. Carding action
ii. Stripping action (05 Marks)

(c) Briefly explain two (02) advantages of "open-end spinning" methods over "ring spinning" method. (05 Marks)

(Q7) (a) Compare "cotton" and "silk" fibre properties considering the following:

i. Fibre length and surface characteristics
ii. Cross sectional and longitudinal sectional views
iii. Dye types that can be used
iv. Moisture regain values
v. Resistance to insects (10 Marks)

(b) Discuss the different dye types that can be used to dye **synthetic** fibres. (05 Marks)

(Q8) (a) With the aid of suitable line diagrams briefly discuss the operational principles of two (02) types of dyeing machines, where the **fabric is moving while the dye liquor is stationary**. (09 Marks)

(b) State four (04) methods of textile printing and briefly explain one (01) of the methods stated. (06 Marks)

(Q9) (a) Explain what you understand by "pre-treatment processes" related to woven fabrics. (03 Marks)

(b) Briefly explain any two (02) pre-treatment processes performed on woven fabrics. (08 Marks)

(c) Providing examples write a short note on **any one (01)** of the following:

i. Finishes enhancing appearance of fabrics

ii. Finishes improving performance of fabrics (04 Marks)