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

050

Study Programme	: Bachelor of Industrial Studies Honours
Name of the Examination	: Final Examination
Course Code and Title	**: TAX4441- Knitted Garment Technology**
Academic Year	: 2021/2022
Date	:21st February 2023
Time	: 0930-1230 hrs
Duration	: 3 hours

General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of Eight (08) questions in Five (05) pages.
3. Write down your Index Number in all the pages of the answer script.
4. **Answer compulsory question one (Q1) and additional five (05) questions.**
5. Question one (Q1) is compulsory and carries thirty (30) marks.
6. Question two (Q2) to eight (Q8) carry fourteen (14) marks each.
7. Answer for each question should commence on a new page. If a question has many parts, all the parts should be answered in the chronological order under the same question.
8. Write down the answered question numbers in the space given in the answer book.
9. Answers should be in clear hand writing.
10. Do not use red colour pen.

Compulsory question

Q1.

a) Explain the following knitting processes.

i. Weft knitting

ii. Warp knitting

(04 marks)

b) Briefly explain why rib fabrics have higher lateral stretchability (widthwise) than longitudinal stretchability (lengthwise). (04 marks)

c) Briefly explain the terms "Rib gating" and "Interlock gating" of needles in weft knitting machines. (04 Marks)

d) Explain the following fashioning statement and calculate the angle of the fabric shape if the ratio of the loop width to height of the fabric 1.3.

- 7 fashioning x 3 courses x 2 loop spaces (04 marks)

e) Briefly explain why it is recommended to move needle loops by only one needle space rather than moving in multiple needle spaces to begin a new wale while widening garment panels in fully-fashion garment production. (04 marks)

f) State three (03) properties/characteristics that can be achieved by introducing tuck stitches to weft knitted fabric structures. (03 marks)

g) Explain the following terms used in warp knitting. (03 Marks)

a. Overlap

b. Underlap

c. Closed lap

h) Explain the process of making an 1x1 purl fabric with two-color alternative horizontal strips in V-bed knitting machine. (04 marks)

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

Answer any five (05) questions from the following seven (07) questions.

Q2. (a) Compare "Integral garment production method" and "Stitch shaped cut garment method" considering at least five (05) aspects. (05 marks)

(b) Using suitable diagrams explain the importance of using the following different knit structures when producing fully fashion garment pieces. (09 marks)

i. Set-up course
ii. Welt
iii. Rib boarder
iv. Roving courses
v. Locking courses
vi. Draw thread

Q3. (a) Compare the below given properties of "1x1 Rib" and "1x1 Purl" knitted fabrics.

i. Appearance of the technical face and back of the fabric
ii. Widthwise extensibility (extensibility along the courses)
iii. Lengthwise extensibility (extensibility along the wales)
iv. Ability to unravel a yarn from the fabric
v. Edge curling

(06 marks)

(b) Draw the yarn path diagrams and square notations of the weft knitted structures represented by the loop diagrams in Figure 1 and 2. (08 Marks)

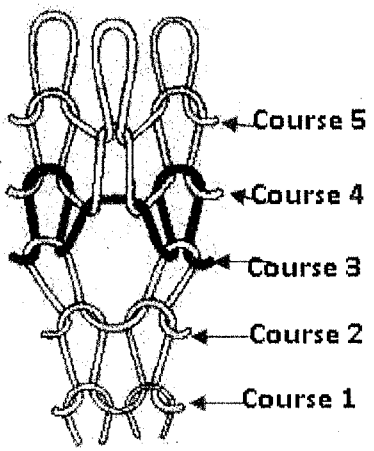


Figure 1

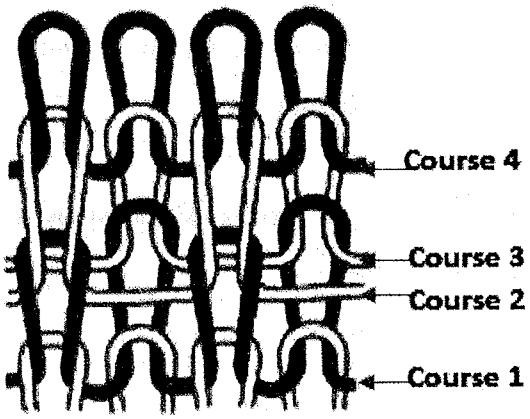


Figure 2

Q4. (a) Briefly explain the yarn feeding mechanisms used in each of the weft and warp knitting processes. (06 marks)

(b) Explain the differences in actions of beard and compound needle during knitted loop formations. (04 Marks)

(c) Define the term "Marker" and list three (03) advantages of computerized marker making over manual marker making. (04 Marks)

Q5. (a) A wet relaxed plain knitted worsted fabric is made from 22 Tex yarn and required stitch density is 224 stitches/cm^2. Calculate the following if the relaxation constants, Ks, K_c, K_w and R are 2160, 56, 42.2 and 1.29 respectively in metric units. (06 marks)

i. Stitch length
ii. Number of courses and wales per centimeter
iii. The fabric weight in grams

(b) A yarn unraveled from a known width "X" of an interlock knitted fabric measures 12 cm in its uncrimped state. Determine the loop length if the number of face wales of in "X" is 40. (04 Marks)

(c) A warp knitted fabric "A" was produced with 20 wales/cm and 35 courses/cm. The stitch length of fabric A is 2.1cm. Determine the **course per cm** and the **structure ratio** of the fabric "B" if a similar fabric "B" was produced with 15 wales/cm and a stitch length of 2.54 cm. (04 marks)

Q6. (a) Discuss the suitability of the following cutting techniques for use with knitted fabrics.

i. Tape cutting machine. ii. Water jet cutters.

(04 marks)

(b) Discuss the specific processes and steps necessary for the following stages of knitted garment production.

i. Pattern making
ii. Maker making
iii. Spreading
iv. Cutting
v. Sewing (10 marks)

Q7. (a) With the aid of clear diagrams, explain the warp knitting action of bearded needles. You must explain in detail how the needle bar, guide bar, and sinker bar facilitate the warp knitting process. (08 marks)

(b) Compare the appearance of the technical face and technical back of the "Plain knit" fabric in weft knitting and "Tricot warp knitted" fabric structures. (04 Marks)

(c) Draw the guide bar lapping diagram of the warp knitted structures denoted by the following chain notations.

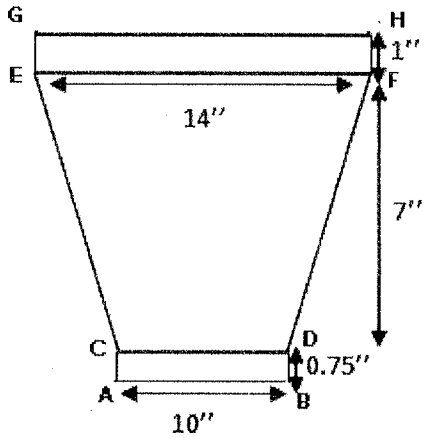
i. 1-0/1-2

ii. 1-0/0-1

(02 marks)

Q8. (a) What is meant by a "knitting statement"? (02 marks)

(b) Prepare the knitting statements for the fully fashioned sleeve shown in the Figure 3.



Courses per inch = 20

Wales per inch = 16

Figure 3

(08 marks)

(c) Write a short note on the "Fast linking machine" used in assembling weft knitted garment pieces. (04 marks)