

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



Study Programme : Bachelor of Industrial Studies Honours
 Name of the Examination : Final Examination
Course Code and Title : **TAX4441 Knitted Garment Technology**
 Academic Year : 2024/25
 Date : 11th February 2026
 Time : 0930-1230h
 Duration : 3 hours



General instructions

1. Read all the instructions carefully before answering the questions.
2. This question paper consists of **Eight (8)** questions in **Four (4)** pages.
3. Answer the question one (Q1), which is compulsory and five (05) more questions from Q2 to Q8. Question one (Q1) carries 25 marks and questions two (Q2) to eight (Q8) carry fifteen (15) marks each.
4. Answer for each question should commence from a new page.
5. This is a Closed Book Test (CBT).

Compulsory Question

- (Q1) (a) Compare rib gating and interlock gating in double jersey fabric production in terms of needle arrangement. (04 marks)
- (b) Define the following terms as used in warp knitting. (04 marks)
- I. Overlap
 - II. Underlap
 - III. Shog
 - IV. Swing
- (c) Draw the lapping diagram for the notation of "2-3/1-0". (03 marks)
- (d) State any two (02) common warp knitted fabrics that are produced using two fully threaded guide bars. (02 marks)
- (e) If the number of wales counted between two points on face side of an interlock fabric is 50 and the length of unravelled yarn is 30 cm, calculate the loop length. (03 marks)
- (f) State three (03) relaxation states of knitted fabrics. (03 marks)
- (g) State two (02) advantages of using a computerized system over the manual method in marker making. (02 marks)

- (h) Briefly explain the difference between "Inter-looping" and "Intra-looping" in stitch formation. (04 marks)

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

- (Q2) (a) State three (03) primary functions of a "Sinker" in knitting. (03 marks)

- (b) Briefly explain the loop formation process using a bearded needle, outlining the key steps with suitable diagrams. (12 marks)

- (Q3) (a) Compare and contrast "Single jersey plain" and "1 x 1 Purl" knitted structures with respect to the following technical aspects. (09 marks)

- I. Point paper notation
- II. The direction of loop drawing during the knitting process
- III. The appearance of the technical face and technical back
- IV. Physical properties, specifically relating to thickness and stretchability

- (b) Briefly explain the differences between a "Tuck stitch" and a "Float stitch" by comparing them with the following three criteria: (06 marks)

- I. Feeding of the yarn
- II. The position of the resultant stitch
- III. The effect on fabric density

- (Q4) (a) A textile quality control lab has tested a plain knitted fabric produced from 20 Tex cotton yarn. The fabric was measured in its wet relaxed state and found to have a loop length of 0.4 cm. The relaxation constants k_s , k_c and k_w of the fabric are 2160, 53 and 41 respectively in metric system.

Using the values provided above, calculate:

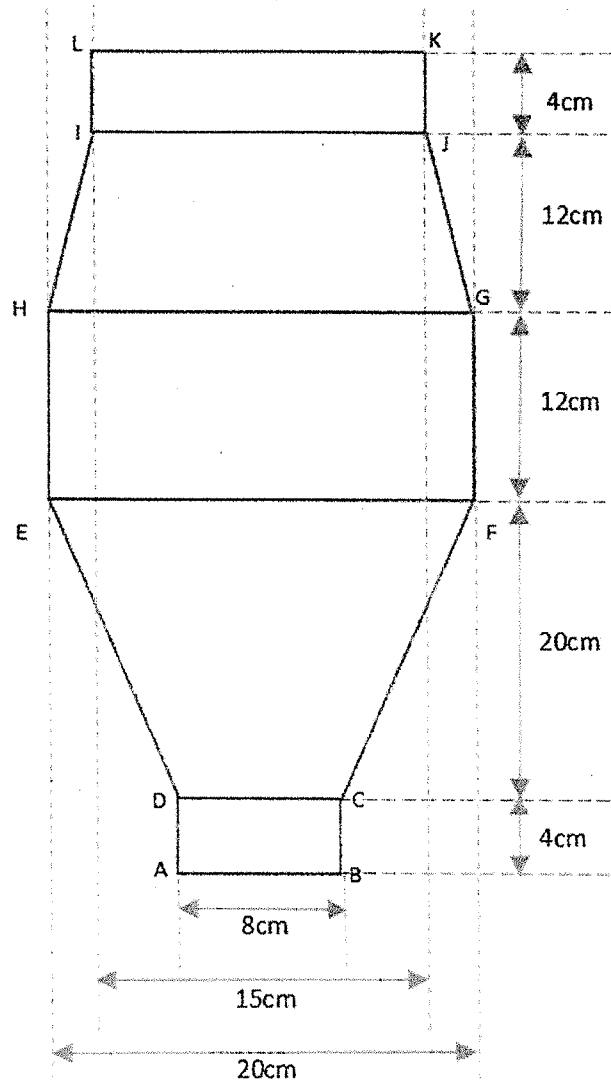
- I. The number of courses per cm. (02 marks)
- II. The area density of the fabric in grams per square meter (GSM). (04 marks)
- III. If the customer requires a heavier fabric with 120 gsm using the same yarn and constants, calculate the required loop length. (02 marks)

- (b) A warp knit fabric has a front-bar run-in of 240cm. Calculate the front-bar stitch Length in mm. (03 marks)

- (c) Briefly explain the concept of "Structure Ratio" and how it is affected when a fabric is stretched. (04 marks)

- (Q5) (a) Briefly explain the practical advantages of the "stretchability" of knitted garments from a consumer's perspective, and contrast this with the challenges it creates during the garment manufacturing process. (04 marks)
- (b) State why the following technical parameters are necessary during the fabric spreading process, providing three (03) reasons for each. (06 marks)
- I. End Allowance
 - II. Edge Allowance
- (c) Briefly explain the working principle of Laser cutting and state three (03) disadvantages of using this method for garment production. (05 marks)
- (Q6) (a) Define the term "Blank" in the context of knitted garment production and explain how the pattern shapes are identified/indicated on them. (04 marks)
- (b) Briefly describe the technical purpose of the following specialized knitting structures used in the production of fully-fashioned garment components. (06 marks)
- I. Welt
 - II. Locking Courses
 - III. Draw Thread
- (c) Define the term "Integral Garment" and briefly explain the main difference between an integral garment and a fully-fashioned garment with respect to assembling. (05 marks)
- (Q7) (a) Define a "Seam" according to the British Standard (BS 3870). List the three (03) main dimensions of a seam that affect garment quality and cost. (05 marks)
- (b) Briefly explain why Lock stitches have limited use in assembling knitted garments compared to Chain stitches. Provide two (02) examples of where a lock stitch would be appropriate in a knitted garment. (04 marks)
- (c) Describe the operation of a cup seaming machine. State in which specific type of garment production is this machine primarily used? (06 marks)

- (Q8) Assume you are designing a fully fashioned garment component as shown in the diagram. The fabric is specified to have a density of 6 courses per cm and 5 wales per cm. Using these values, prepare a knitting statement for the component and clearly show all your calculations. (15 marks)



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