

CONFIDENTIAL



UTHM

Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2019/2020**

COURSE NAME : KNITTING PRODUCTION
TECHNOLOGY

COURSE CODE : BNH 30304

PROGRAMME CODE : BNH

EXAMINATION DATE : DECEMBER 2019 / JANUARY 2020

DURATION : 2 HOURS AND 30 MINUTES

INSTRUCTION : ANSWERS ALL QUESTIONS

TERBUKA

THIS QUESTION PAPER CONSISTS OF **FIVE (5)** PAGES

CONFIDENTIAL

- Q1** (a) Describe the following, and illustrate with diagram when necessary.
- (i) Wales and course
 - (ii) Weft knitting and warp knitting
 - (iii) Weaving and Knitting
 - (iv) Needle loop and sinker loop
 - (v) Technical face and technical back
- (10 marks)
- (b) Define needle gauge. Compare the fabrics with higher and lower gauge in terms of fabric density and number of needles per inch.
- (5 marks)
- (c) Assuming the same yarn is used to design 3x3 rib and 2x2 rib, select the suitable design that would produce a thicker fabric. Justify your answer.
- (5 marks)
- Q2** (a) Create a six course point paper notation for Interlock construction. The first four courses knit two effective Interlock courses, while the fifth course knits loops only on the front bed and the sixth one knits loops only on the back bed.
- (10 marks)
- (b) There are four primary structures in weft knitting that denote the basic structures of a weft knitted fabric. By using schematic diagrams or symbolic notations, identify these four structures.
- (4 marks)
- (c) Compare the **FOUR (4)** primary structures identified in **Q2 (b)** in terms of their extensibility, and curling tendency.
- (6 marks)

TERBUKA

- Q3 a) In order to design and produce a warp knitted fabric, a pattern must be illustrated using a knitting notation. The lapping plan of a warp knitted construction produced on a 4-guide bar warp knitting machine is given in the following

Guide bar 1: 1 – 0/ 1 - 2//

Guide bar 2: 0 – 0

Guide bar 3: 4 – 5/ 1 - 0

Draw the lapping diagram of the warp knitted fabric.

(4 marks)

- (b) A few types of warp knitting machines are built to produce several types of fabrics in order to meet market demand and solving the technical problem.

- (i) List **TWO (2)** types of warp knitting machine beside Tricot machine and Raschel machine.

(2 marks)

- (ii) Describe the knitting cycle of the tricot machine using bearded needle.

(6 marks)

- (iii) Explain the function of the sinkers used in Tricot machine and Raschel machine.

(2 marks)

- (c) Warp knitting machine can be classified into several types based on several factors. Assume you are in charge of selecting warp knitting machine in your company, prepare **THREE (3)** criteria that contribute to the classifications of warp knitting machines in order to choose a suitable machine to fit the needs of the company.

(6 marks)

TERBUKA

- Q4** (a) You are a designer for a sportswear and active clothing retailer, and you are designing a new range of sportswear products for inner lining of shoes. You have been given two sets of fabric samples; warp knitted fabric and weft knitted fabric.
- (i) Name the fabric sample that you will choose and justify your answer by comparing their fabric properties. (3 marks)
- (ii) In your opinion, what are the required fabric properties to produce a functional and comfortable inner lining in shoes product. (5 marks)
- (b) Describe the purpose of conducting dimensional stability. Explain the factors influencing the dimensional stability properties of fabric. (4 marks)
- (c) Warp knitted fabric can be produced using one guide bar or multiple guide bars.
- (i) Discuss **TWO (2)** of the rules governing the two guide bar structures. (4 marks)
- (ii) Explain **TWO (2)** advantages in terms of fabric properties when using two or more guide bars. (4 marks)
- (d) Various kinds of pattern can be produced by altering the lapping movements and the number of guide bars used in warp knitting machine. Draw the lapping diagram for full tricot and sharkskin structures that are produced by two full guide bar tricot. (6 marks)

TERBUKA

- Q5** (a) Describe fully-threaded guide bar. List **TWO (2)** types of fabrics that can be produced from part-threaded guide bar. (2 marks)
- (b) Warp knitted fabrics are extensively used to produce smart textiles and technical textiles in automotive industries, military, biomedical, sportswear and more.
- (i) Explain **FOUR (4)** advantages of using warp knitting in producing smart textiles and technical textiles in comparison of using weft knitting or weaving techniques. (4 marks)
- (ii) Give **TWO (2)** examples of smart textile's application and state **TWO (2)** products of each application. (4 marks)
- (c) Distinguish warp and weft knitting machine in terms of their machine classification. (4 marks)
- (d) Discuss the future trends in warp or weft knitted fabrics manufacturing. (6 marks)

-END OF QUESTIONS-

TERBUKA