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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2016/2017**

COURSE NAME : KNITTING PRODUCTION
TECHNOLOGY II

COURSE CODE : BNH 30303

PROGRAMME CODE : BNH

EXAMINATION DATE : DECEMBER 2016 / JANUARY 2017

DURATION : 2 HOURS 30 MINUTES

INSTRUCTION : ANSWERS ALL QUESTIONS

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THIS QUESTION PAPER CONSISTS OF FIVE (5) PAGES

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- Q1** (a) Fabric formation techniques include weaving, knitting, braiding, netting/lacing and non-woven process. Compare weaving and knitting techniques by drawing the structure of fabrics and briefly explain the difference. (4 marks)
- (b) Knitting process are divided into weft knitting and warp knitting.
- (i) Construct a flowchart of warp knitting process and explain the procedure. (4 marks)
- (ii) Sketch a diagram of swinging and shogging movement of guide bar for tricot machine. Describe the name of the lapping movements that occur due to the guide bar actions. (4 marks)
- (c) Warp knitted fabric consists of overlap and underlap that are formed due to swinging and shogging actions. Overlap and underlap can be described in lapping diagram and chain notations.
- (i) List the overlap and underlap variations and the structure produced. (5 marks)
- (ii) Determine the length of underlap for a 1 - 0/ 3-4// lapping plan. (1 mark)
- (iii) Illustrate the lapping diagram of 1 - 0/ 3-4// to show the length of the underlap in question c (ii). (2 marks)

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- Q2** (a) A few types of warp knitting machines are built to produce different types of fabric in order to meet the market demand and solving the technical problems. List **FIVE (5)** types of warp knitting machines. (5 marks)
- (b) Warp knitting machines are classified in several types. Assume you are in charge of selecting warp knitting machine in your company. You have to present some information to higher management. Analyze **THREE (3)** criterias that contribute to the classifications of warp knitting machines in order to choose a suitable machine that fit the needs of the company. (6 marks)
- (c) By referring to **Figure Q2 (b)**, specify which one between (i) and (ii) is the knitting element for tricot machine and raschel machine. Define **THREE (3)** knitting elements that distinguish the tricot machine and raschel machine. You may put the answer in a table form. (9 marks)
- Q3** (a) Variety of pattern and large amount of fabrics can be produced by using two full set guide bars. Different kind of fabrics are obtained by altering the lapping movements. Discuss **THREE (3)** factors that affect the properties of warp knitted fabric. (6 marks)
- (b) Fabric properties can be improved by having longer underlap. Explain about the underlap and justify this statement. (4 marks)
- (c) (i) Classify **THREE (3)** other fabric structures beside full tricot, locknit and reverse locknit which are produced by two full guide bar tricot. (3 marks)
- (ii) Differentiate between locknit and reverse locknit structure by drawing its lapping diagram. State the chain notation of the fabrics. (4 marks)
- (iii) Distinguish between locknit and reverse locknit in terms of the formation of underlaps and the fabric characteristic and applications. Construct a table to show the information. (3 marks)

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- Q4** (a) **Figure Q4 (a)** shows the action of inlay in warp knitting.
- (i) Explain the formation of overlap and underlap formed in **Figure Q4 (a)**. (3 marks)
 - (ii) Name the machine that was designed to inlay the yarn without the use of inlay guide bar. Explain the knitting actions of the machine. (9 marks)
- (b) Differentiate between laying-in process and full-width weft insertion process. (4 marks)
- (c) List the advantages of laying-in technique and weft insertion during warp knitting process. (4 marks)
- Q5** Warp knitted fabric is now produce to meet high performance requirements in technical areas. It much known as technical textiles which had beneficial automotive industries, military, biomedical, sport wear and more.
- (a) Explain **FOUR (4)** advantages of warp knitting in producing technical textile. (4 marks)
 - (b) Geotextile and safety textile are as instance of technical textile's applications. Gives **FOUR (4)** other examples of applications of technical textile and state **TWO (2)** products of each application. (4 marks)
 - (c) List **SIX (6)** manufacturers that use warp knitting process. State the region and its specialty. (12 marks)

-END OF QUESTIONS -

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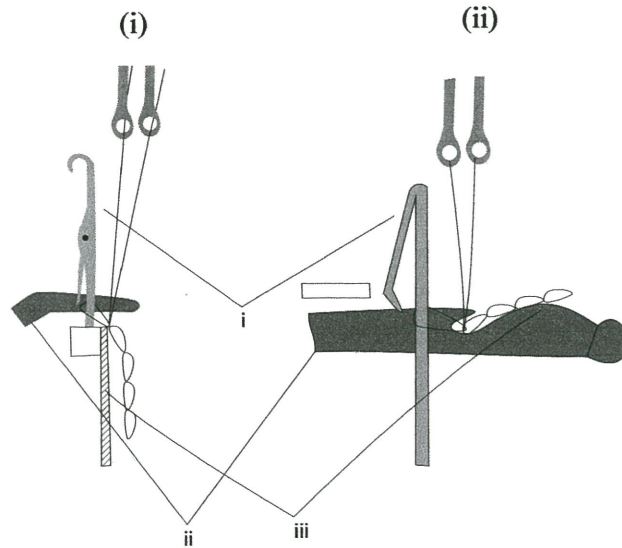


Figure Q2 (b)

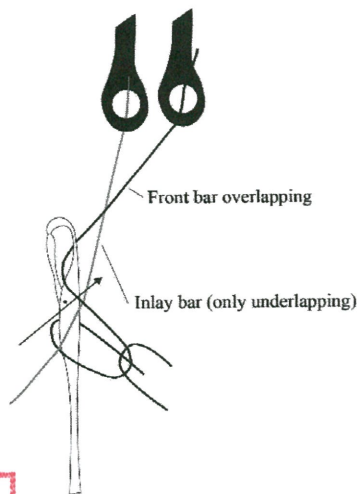


Figure Q4 (b)

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