

CONFIDENTIAL



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

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

COURSE NAME : WEAVING PRODUCTION
TECHNOLOGY

COURSE CODE : BNH 30104

PROGRAMME : BNH

EXAMINATION DATE : DECEMBER 2019/JANUARY 2020

DURATION : 3 HOURS

INSTRUCTION : ANSWER ALL QUESTIONS

THIS QUESTION PAPER CONSISTS OF FIVE (5) PAGES

CONFIDENTIAL

TERBUKA

- Q1** (a) List any **THREE (3)** auxiliary motions in a typical weaving machine. (3 marks)
- (b) Differentiate between rapier and projectile in term of:
- (i) Insertion rate (pick per minutes)
 - (ii) Shedding mechanism that can be used
 - (iii) Disadvantages of each loom types
- (6 marks)
- (c) (i) By comparing between air-jet and water-jet looms, decide the best loom to produce 100% cotton denim fabric. Give your reasons. (2 marks)
- (ii) What are the main physical differences between an air-jet and water-jet that affect the flight of the yarn ? (2 marks)
- (d) Discuss **THREE (3)** factors that can cause warp breakages in weaving operation. (3 marks)
- Q2** (a) Explain the tension variation in the warp sheet during weaving cycle. (2 marks)
- (b) List **TWO (2)** advantages and **TWO (2)** disadvantages of jacquard shedding compared to other shedding systems. (2 marks)
- (c) The yarn width in the reed is 105 cm and the shuttle length, with the curved ends neglected, is 35 cm. The loom speed is 220 picks per minutes, and 110° of crankshaft rotation are available for shuttle traverse through the shed. Shuttle retardation is 950 cm/s^2 . Calculate the following:
- (i) Mean velocity
 - (ii) Maximum velocity
 - (iii) Minimum velocity before entering shuttle box
- (6 marks)

TERBUKA

- (d) Write short notes on the following subjects:
- (i) Reason that limits the number of cams on a weaving machine.
 - (ii) Does the choice of shedding system depend on fabric style?
 - (iii) **TWO (2)** differences between negative and positive dobby. (6 marks)
- Q3**
- (a) Explain how temple is useful to prevent end breakages at the selvages. (2 marks)
 - (b) Discuss **TWO (2)** important factors of balance tension between take-up and warp let-off section. (2 marks)
 - (c) Explain the differences between “balanced shed” and “unbalance shed”. (4 marks)
 - (d) List **THREE (3)** factors that effects the efficiency of on an air-jet nozzle. (3 marks)
 - (e) Compare the performance of the following yarns in air-jet weaving. Assume that the yarns have the same count.
 - (i) Ring spun yarn
 - (ii) Textured yarns
 - (iii) Monofilament yarn(6 marks)
- Q4**
- (a) List **FOUR (4)** the differences between precision and non-precision winding. (4 marks)
 - (b) With the aid of a diagram, outlines the **THREE (3)** methods of driving used in winding. (3 marks)

- (c) Based on the winding pattern, yarn packages can be grouped as parallel, near-parallel and cross wound packages. Compare the difference between each pattern in terms of packages stability. (4 marks)
- (d) The empty diameter of a spindle-driven cylindrical package is 5 cm. The spindle speed is 2,000 revolution per minute and traverse velocity is 100 m/min. Determine:-
- (i) Winding speed and angle of wind at the start.
 - (ii) Winding speed and angle of wind when package diameter becomes double. (6 marks)
- Q5**
- (a) Explain the purposes of warping process. (2 marks)
- (b) List **TWO (2)** important controls for warping process. Show the impacts of these controls for successful weaving operation. (2 marks)
- (c) Shows **THREE (3)** functions of components of creel and **THREE (3)** features of components of head stock that are used in warping machine. (3 marks)
- (d) A full beam produced on a direct warping system is having 1.4 m width and contains 500 ends of 30 tex yarn. The empty and full beam diameters are 30 and 75 cm, respectively. If the beam density is 0.4 g/cm^3 , then calculate the length of warp and its mass in kg. (4 marks)
- (e) Explain the differences between high speed warping and sectional warping. Explain with example when the sectional warping is preferred over high speed warping. (6 marks)

TERBUKA

- Q6** (a) State **THREE (3)** disadvantages of sizing and describe different types of sizing. (3 marks)
- (b) Explain what factors are to be considered for choosing size ingredients and shows the function of size ingredients. (4 marks)
- (c) Explain the factors that influences size take up percentage and show the impacts of increasing size pick-up to weaving operation. (3 marks)
- (d) Outline **TWO (2)** technological changes of yarn due to sizing. (2 marks)
- (e) 100 kg oven dry warp yarns were sized to the add-on of 8% and dried to overall (yarn and dry size) moisture content of 10%. Calculate the final mass of the sized yarns. (5 marks)

- END OF QUESTION -

TERBUKA