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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2015/2016**

COURSE NAME : **YARN PRODUCTION
TECHNOLOGY**

COURSE CODE : **BNH 20203**

PROGRAMME CODE : **BNH**

EXAMINATION DATE : **JUNE / JULY 2016**

DURATION : **2 ½ HOURS**

INSTRUCTION : **ANSWERS ALL QUESTIONS**

THIS QUESTION PAPER CONSISTS OF SIX (6) PAGES

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- Q1** (a) Define the meaning of yarn. Discuss the difference between yarn and thread. (4 marks)
- (b) **Figure Q1 (b)** illustrates the yarn made of natural fibre.
- (i) Name the fibre that the yarn in **Figure Q1 (b)** are made of. Give another example of yarn made of protein fibre. (2 marks)
- (ii) Identify the number of ply, twist direction and turns per inch (TPI) of the yarn from **Figure Q1 (b)**. How does twist in a yarn affect the finished fabric? (5 marks)
- (iii) Identify what is meant by yarn size. Assess the difference between 180 Den yarn and 30 Tex yarn. (5 marks)
- (c) Tony intended to buy jersey for his football match. Recommend **THREE (3)** important yarn properties that Tony needs to consider for his jersey and specify the suitable yarn type. (4 marks)
- Q2** (a) Compressed cotton bale were transferred to Blowroom to be processed. Construct the basic operation sequence in blowroom and define the purpose of each process. (6 marks)
- (b) 600 kilograms fibres were processed in blowroom and the waste collected was 2100 grams. Analyse the percentage of trash eliminated during the process. (3 marks)
- (c) Differentiate the 'striping action' and 'carding action' occurs in carding process with aid of figures. Justify which part of the machine they are involved. (6 marks)
- (d) A carding unit with calendar roller diameter of 90 mm and roller speed of 550 rpm was producing sliver at 28.2 kg/hr. The waste generated is 1.8% and the machine efficiency given is 90%. Calculate the sliver weight (in Tex) produced by the machine. (5 marks)

- Q3** (a) Identify the operation involved in **Figure Q3 (a)** in combing process. Propose the operational principle on both processes. (6 marks)
- (b) Review the following problems and suggest methods to overcome them.
- (i) Too many long fibres in cylinder comb. (3 marks)
- (ii) High neps and trash in comb sliver. (3 marks)
- (iii) Too many noil elimination. Average noil elimination of not more than 15% was needed. (3 marks)
- (c) Irregularity refers to the uneven distribution of fibres along the length of slivers.
- (i) List **TWO (2)** mechanical factors that causes irregularity. (2 marks)
- (ii) State **THREE (3)** suggestions on how to reduce irregularity of fibres in yarn processing. (3 marks)
- Q4** (a) Two types of sliver was produced from the same card sliver but having different drafting unit, 6 and 12. With appropriate example and calculation, compare the drafting arrangement for each sliver. (6 marks)
- (b) Improvement of sliver quality in terms of evenness, regularity and blending of fibers can be achieved in drawing process.
- (i) Explain the purpose of doubling and levelling methods in drawing. (4 marks)
- (ii) Determine the card slivers weight if the infeed weight is recorded as 40 kTex and doublings are 8. (2 marks)

- (c) **Process X in Figure Q4 (c)** convert the slivers into thinner sliver size.
- (i) Technically, give justification on why **Process X** is important in yarn manufacturing. (2 marks)
- (ii) Explain **TWO (2)** additional elements included in **Process X** that distinguish it from the previous drawing process. (4 marks)
- (iii) The flyer speed is recorded as 1500 rpm. Delivery roller speed is 500 rpm and its diameter is 1.125". Calculate the inserting twist. (2 marks)

- Q5 (a) Figure Q5 (a)** shows gear arrangement for spinning process. Analyse:
- (i) Draft between Front Roller (FR) and Middle Roller (MR) (3 marks)
- (ii) Draft between Middle Roller (MR) and Back Roller (BR) (3 marks)
- (iii) Total draft (3 marks)
- (b) Define the task of traveler in ring spinning. Propose a suitable type of traveler used for synthetic and blend materials. (4 marks)
- (c) Discover **THREE (3)** possible factors for end-breaks during ring spinning process. (3 marks)
- (d) Aided with diagram, construct a direct drive (positive) package drive system used for winding. (4 marks)

-END OF QUESTIONS -

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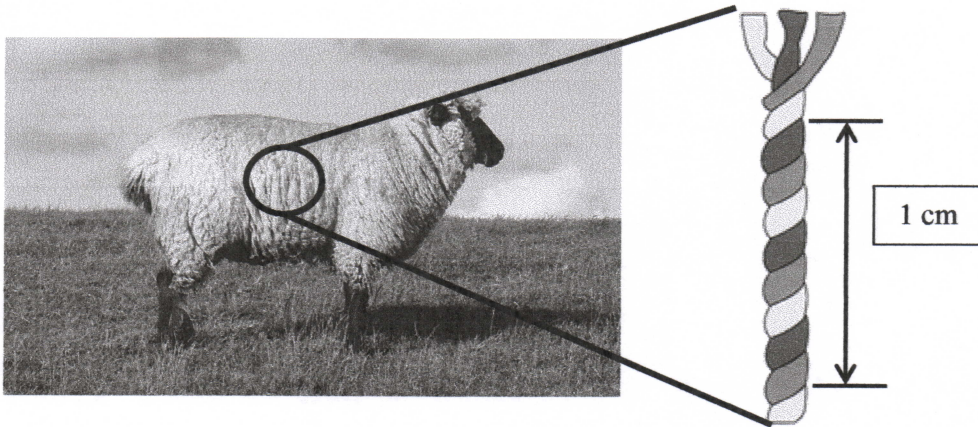
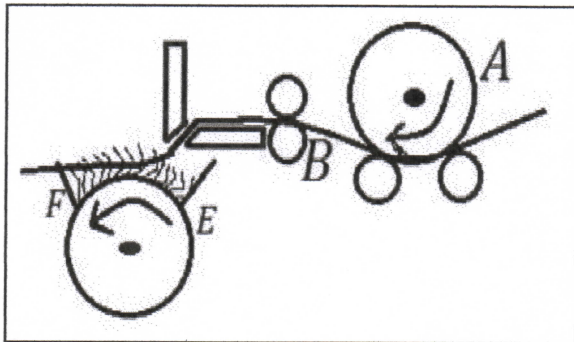
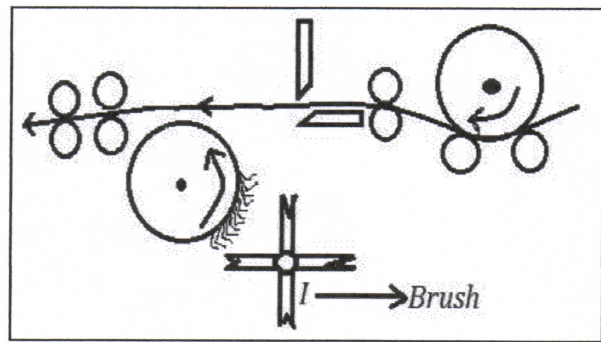


Figure Q1 (b)



(i)



(ii)

Figure Q3 (a)

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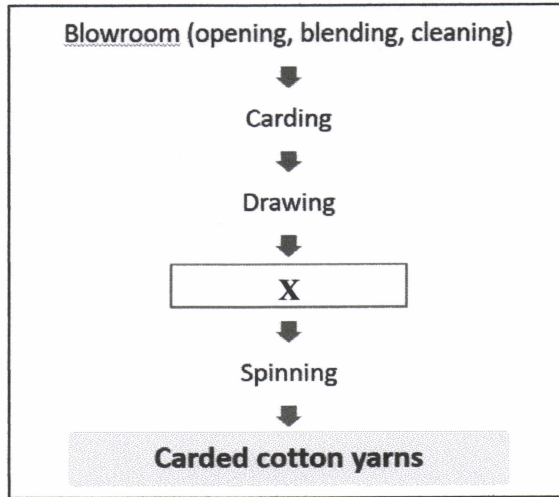


Figure Q4 (c)

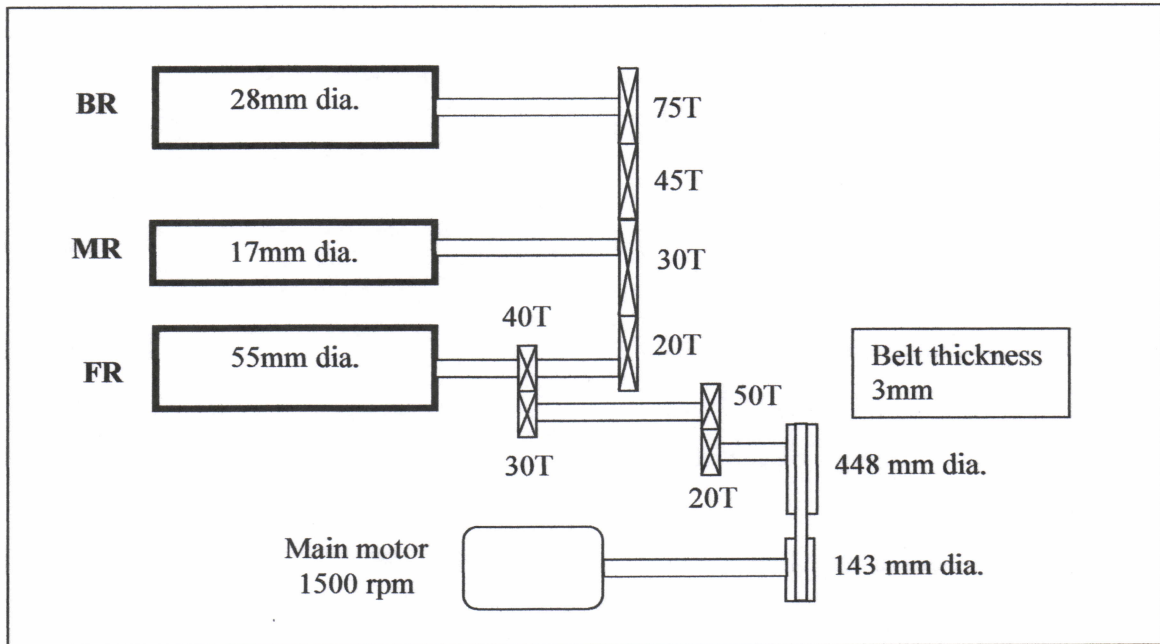


Figure Q5 (a)

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