Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2018/2019

COURSE NAME	:	YARN PRODUCTION TECHNOLOGY
COURSE CODE	:	BNH 20204
PROGRAMME CODE	:	BNH
EXAMINATION DATE	:	JUNE / JULY 2019
DURATION	:	2 HOURS 30 MINUTES
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

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

Q1 (a) (i) As a textile engineering technologist, recommend the processes where blending of TC can be made.

(2 marks)

(ii) Discover the benefit of producing TC.

(2 marks)

(iii) List **TWO (2)** factors affecting the properties of blended yarns.

(2 marks)

(b) (i) Sketch **THREE (3)** opening devices used in blowroom line.

(3 marks)

(ii) Describe **THREE (3)** factors affecting the intensity of the opening.

(3 marks)

(c) (i) Name the parts A, B and C in **Figure Q1 (c)**.

(3 marks)

(ii) Explain the function of each part in **Q1(c)(i)**.

(3 marks)

(d) Point out **TWO (2)** of the reasons why fibres must be prepared before combing process can be performed.

(2 marks)

Q2 (a) Describe the parts and operations involved in the elimination of short fibres in cards.

(3 marks)

(b) A carding unit with calendar roller diameter 85mm is producing sliver at 27.3 kg/hr. The roller speed is 600rpm with 97% machine efficiency. The waste generated is recorded as 2.3%. Calculate the sliver weight (in Tex).

(7 marks)

(c) Evaluate the card sliver weight if the infeed weight is 30 kTex and doublings are 6.

(2 marks)

(d) (i) Explain what is meant by yarn size.

(2 marks)

(ii) Assess the difference between 180 Den yarn and 30 Tex yarn.

(3 marks)

(e) Irregularity refers to the uneven distribution of fibres along the length of slivers.

(i) List **ONE (1)** mechanical factor that cause irregularity in drafting.

(1 mark)

(ii) State **TWO (2)** suggestions on how to reduce irregularity of fibres in yarn processing.

(2 marks)

Q3 (a) Review the following problems and suggest methods to overcome them.

(i) Too many long fibres in cylinder comb.

(2 marks)

(ii) High neps and trash in comb sliver.

(2 marks)

(iii) Too many noil elimination. Average noil elimination of not more than 15% was needed.

(2 marks)

(b) **Figure Q3 (b)** 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)

(c) Evaluate **THREE (3)** possible factors for end-breaks during ring spinning process.

(3 marks)

(d) Examine **TWO (2)** additional elements included in Roving process that distinguish it from the previous drawing process.

(2 marks)

Q4 (a) As a textile engineering technologist in a spinning industry, you found that some automation features need to be implemented to the operations. Highlight **FOUR (4)** areas in spinning where automation is necessary and justify the reason.

(4 marks)

(b) Wet spinning is one of the oldest polymer spinning process.

(i) Explain the principle operation of wet spinning.

(4 marks)

(ii) Construct the schematic of wet spinning process.

(6 marks)

(c) Determine **TWO (2)** functions of Balloon Control Ring (BCR) in Ring Spinning process.

(2 marks)

(d) Find the twist level for the following yarn sizes if the same TM25 is used.

(i) 40 Tex
(ii) 10 Tex

(4 marks)

Q5 (a) Propose the methods of quality checking for the following output.

(i) Opening and cleaning
(ii) Carding
(iii) Ring spinning

(6 marks)

(b) List **TWO (2)** types of yarn manufacturing methods operating on the open-end spinning principle.

(2 marks)

(c) (i) Describe the operational principle of Rotor Spinning. Include the suitable fibre type to be processed with this method.

(6 marks)

(ii) Explain the output characteristics produced by Rotor Spinning.

(4 marks)

(d) Demonstrate the function of flyer in roving process.

(2 marks)

-END OF QUESTIONS –

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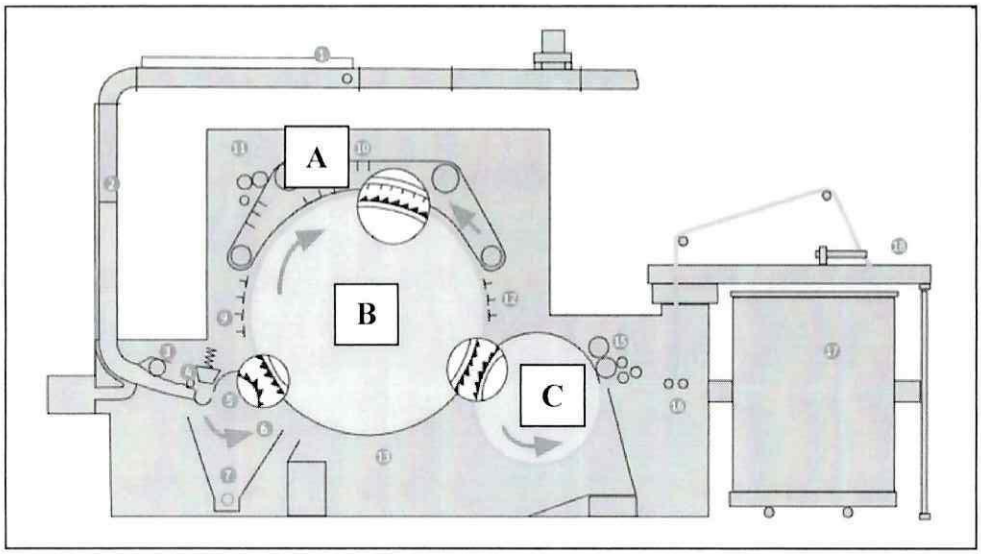

Figure Q1 (c)

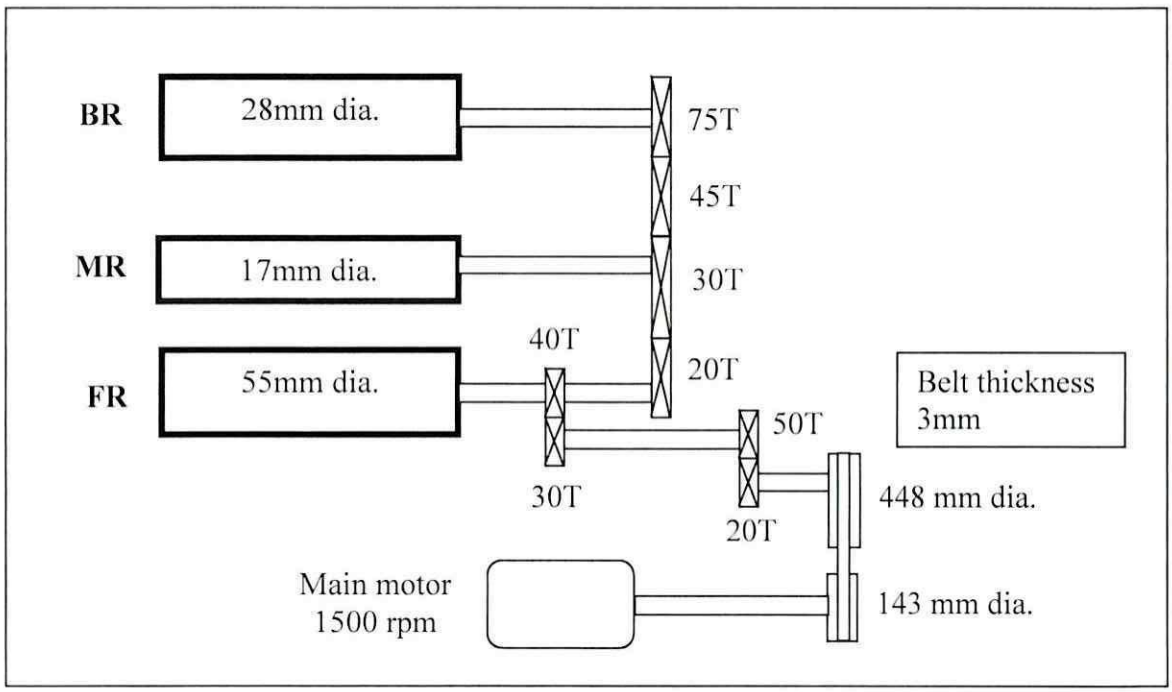

Figure Q3 (b)