Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2018/2019

COURSE NAME	:	INDUSTRIAL AUTOMATION
COURSE CODE	:	BPC 41203
PROGRAMME CODE	:	BPB
EXAMINATION DATE	:	DECEMBER 2018/ JANUARY 2019
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS QUESTION PAPER CONSISTS OF **THREE (3)** PAGES

Q1 (a) Define the technology automation in the automation control.

(4 marks)

(b) Describe **THREE (3)** importance of at automated system.

(6 marks)

(c) Illustrate an automation and control technologies in the production systems with appropriate explanation.

(10 marks)

Q2 (a) Explain **FIVE (5)** benefits of Automated Production Systems.

(5 marks)

(b) Describe the following with appropriate illustration.

(i) L-shape layout.

(5 marks)

(ii) U-shape layout.

(5 marks)

(iii) Rectangular Configuration.

(5 marks)

Q3 (a) Calculate the binary to decimal number with the appropriate solution.

(i) 1101010111_2

(2 marks)

(ii) $11110010_2 + 100111_2 - 110011_2 + 1101001_2$

(8 marks)

(b) Calculate into binary number with the solution methods.

(i) 5637_{10}

(5 marks)

(ii) 80050_{10}

(5 marks)

Q4 A welding operation on an aluminum alloy makes a groove weld. The cross-sectional of the weld is 30 mm^2. The welding velocity is 5 mm/sec. The heat transfer factor is 0.92 and the melting factor is 0.48. The melting temperature of the aluminum alloy is 650°C.

Calculate:

(a) The unit energy required to melt.

(4 marks)

(b) Net heat available for welding.

(4 marks)

(c) Net heat energy used.

(4 marks)

(d) Rate of input heat energy generated.

(8 marks)

Q5 The production turning operation has decreed that a single pass must be completed on the cylindrical workpart 200 mm in diameter and 600mm long is to be turned in lathe machine. Cutting speed = 2.20 m/s, feed = 0.30 mm/rev and depth of cut 2.50 mm.

Calculate:

(a) Rotational speed.

(5 marks)

(b) Machining time.

(5 marks)

(c) Material removal rate.

(10 marks)

- END OF QUESTIONS -