

CONFIDENTIAL



UTHM

Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
(TAKE HOME)
SEMESTER II
SESSION 2019/2020**

COURSE NAME : DIGITAL ELECTRONIC
COURSE CODE : BBV30403
PROGRAMME CODE : BBE
EXAMINATION DATE : JULY 2020
DURATION : 24 HOURS
INSTRUCTION : ANSWER ALL QUESTIONS

TERBUKA

THIS EXAMINATION PAPER CONSIST OF **THREE (3) PAGES**

CONFIDENTIAL

Q1 Subtract the following hexadecimal number $C3_{16} - 0B_{16}$ then convert to binary. (5 marks)

Q2 Simplify the following Boolean expression below using boolean equation and draw circuit based on your answer.

$$\overline{A}C(\overline{A}BD) + \overline{A}BCD + \overline{A}BC$$

(10 marks)

Q3 For the multiplexer in figure Q3, draw the equivalent circuit and determine the output for the following input states : $D_0 = 0, D_1 = 1, D_2 = 1, D_3 = 0, S_0 = 1, S_1 = 0$.

(15 marks)

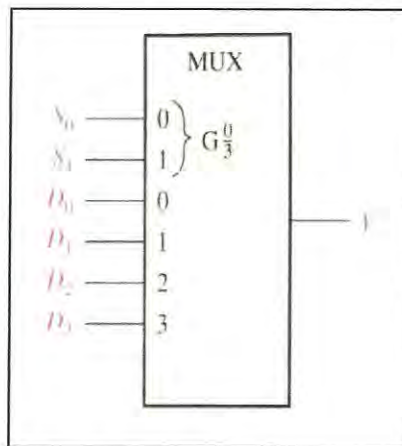


Figure Q3

Q4 Design a voting system with 4 inputs (A, B, C, D) and one output (F). If any three or all four inputs are high, the output must go HIGH also. If the voting is 2/2 (2 HIGH 2 LOW) then the output must take up the state of input D. If only one or none of the inputs is HIGH, the output must be LOW.

- (a) Obtain the truth table of the circuit
- (b) Simplify the output function
- (c) Draw the logic diagram of the circuit using NOR gates only.

(20 marks)



- Q5** (a) Design a 3 bit gray code synchronous counter using JK flip flop. Show clearly every step of the design process. (40 marks)
- (b) Determine and justify types of counter that suitable to count randomly with low propagation delay. (10 marks)

-END OF QUESTIONS-

TERBUKA