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Following Paper ID and Roll No. to be filled in your Answer Book.

PAPER ID : 21102   Roll No. [ ][ ][ ][ ][ ][ ][ ][ ][ ]

BCA Examination 2018-19

(First Semester)

DIGITAL ELECTRONICS

Time : Three Hours]   [*Maximum Marks* : 60

Note :   Attempt all questions. All questions are compulsory.

SECTION 'A'

1.   Attempt all parts of the following : $1 \times 8 = 8$

  (a)   Convert octal number 475 to binary and decimal.

  (b)   Why NAND/NOR gates are called universal logic gate?

  (c)   Draw the logic digram and truth table for half adder.

  (d)   Differentiate between decoder and multiplexer.

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(e)   What is the significance of parity bit?

(f)   Write the characterstic equation for S R filp flop.

(g)   What is the difference between Synchronous and Asynchronous counters?

(h)   How many number of clock pulses required for serial data loading in an n bit register?

SECTION 'B'

Note :   Attempt any two parts of the following : 6×2=12

2. (a)   Write a note on error detecting and error connecting code.

    (b)   Design full subtractor with truth table and logic diagram.

    (c)   Explain race arround condition in J. K filp flop and what is the condition to avoid it?

    (d)   Explain Johson counter with suitable diagram and truth table.

SECTION 'C'

Note :-   Attempt all question from this section. Attempt any two parts from each question :   8×5=40

3. (a) Perform the following arithmetic operation :

    (i) Add 96 and 56 BCD numbers

    (ii) Subtract 748 and 983 BCD number

  (b) Simplify the following boolean function's and implement the result using logic gate.

    $f(A, B, C, D) = \sum m(0,1,2,3,11,12,14,15)$

  (c) Implement the following boolean function with NAND-NAND logic

    $F = \overline{A}\ \overline{B} + \overline{A}C + \overline{B}C$

4. (a) Design 4 bit binary to gray code converter.

  (b) Implement the following function using 8 :1 max

    $f(A, B, C, D) = \sum m(0,3,5,6,10,12)$

  (c) Design full adder circuit using decoder.

5. (a) Explain in detail about J K flip flop. Also mention function, characterstic, excitation table for J K filp flop.

  (b) Explain master slave J K Flip Flop in detail and mention how race arround condh is not present in this flip flop .

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    (c)   Convert S R flip flop to J K flip flop.

6. (a)   Draw the neat circuit diagram of 4 bit ring counter and explain its working.

    (b)   Explain how shift register works with the help of neat and clean diagram.

    (c)   What is the difference between ring counter and Johson's counter mention in detail.

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