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(Printed Pages 4)

Roll No. _____

19/1559

B.C.A. (Second Semester)

Examination, 2019

Second Paper

(Digital Electronics & Computer Organization)

Time : Three Hours ***Maximum Marks : 75***

Note: Attempt any **five** questions. **All** questions carry equal marks. The answers to short questions should not exceed 200 words and the answers to long answer type questions should not exceed 500 words.

1. Explain the following terms : 5×3=15

   (a) De Morgan's Law

   (b) ROM & RAM

   (c) Counters

P.T.O.

2. (a) What are the basic gates? How other gates may be constructed by using the basic gates? Explain. 7.5×2=15

   (b) With suitable diagram, explain JK & RS flip-flops.

3. (a) Design 5-Mod Counters using JK-flip-flop & implement them. 7.5×2=15

   (b) Solve the following boolean function using K-Map. Implement the simplified function using logic gates.

   $F(w, x, y, z) = \Sigma (0, 1, 4, 5, 6, 8, 9, 10, 12, 13, 14)$

4. (a) With a neat block diagram explain the function of encoder. Explain periority encoder also? 7.5×2=15

(b) Explain serial transfer with respect to shift register with suitable example.

5 (a) Differentiate between Asynchronous & Synchronous circuits. What are the problems related to Asynchronous circuits?

7.5×2=15

(b) Explain Cache memory?

6. (a) Differentiate between floppy disk & hard disk. 5+5+5

(b) Differentiate between SOP & POS, minterm and maxterm.

(c) Differentiate between Multiplexor & Decoder.

7. (a) What is meant by the race around condition? How can it be solved? Explain.

7.5×2=15

(b) Draw circuit diagram with the truth table for full addor.

8. Write short notes on any **three** of the following: 5×3=15

(i) EPROM

(ii) State table

(iii) Master-Slave Flip Flop

(iv) Implement F(a, b, c) = Σ (0, 6) using NAND & NOR gate.