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(Printed Pages 4)

**Section-A**

Roll No.

**Note :** Answer in brief the following:

$3 \times 5 = 15$

**Paper Code - 0127004/0197904**

**B.C.A. 1<sup>st</sup> Sem. (Main/Back/Ex.)**

**Examination, Dec.-2024**

**Bachelor of Computer Application/  
B.VOC (IT)**

**Digital Electronics & Computer  
Organization**

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

**Note :** Attempt **all** the sections as per instructions.

**Note :** Attempt all **five** questions from

**Section-A.** Attempt any **two**

questions out of the following

**3** questions from **Section-B.**

Attempt any **three** questions out of the following **5** questions from

**Section-C.**

1. Simplify  $(A \cdot B(C + B \cdot D) + A)C$  using Boolean laws.

2. State the differences between combinational and sequential circuit.

3. Explain Associative memory.

4. Define flip-flop. Explain any two application of it.

5. Explain EPROM and PROM.

**Section-B**

$2 \times 7\frac{1}{2} = 15$

6. (i) State and prove DeMorgan's theorem.

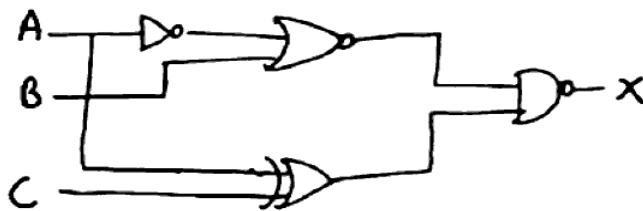
(ii) Prove that NAND and NOR gates are universal gates.

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**P.T.O.**

7. (i) Explain the difference in the functions of an AND gate and an OR gate.

(ii)



8. State the differences between:-

- (i) Cache Memory and Virtual Memory
- (ii) Static RAM and Dynamic RAM

**Section-C**       $3 \times 15 = 45$

9. (i) Reduce the following function using

K map: <https://www.msustudy.com>      10

$$F(A, B, C, D) = \pi(0, 3, 4, 7, 8, 10, 12, 14) + d(2, 6)$$

(ii) Express the Boolean function      5

$$F = XY + X'Z \text{ in product of maxterm}$$

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P.T.O.

10. (i) What are the ways in which a negative number can be represented in the memory of a computer? 7.5

(ii) Simplify  $y = (A+B)(A+B')(A'+B')$  by using laws and theorem of Boolean Algebra.      7.5

11. Give the truth table, characteristic table, excitation table and characteristic equation of SR flip flop, JK flip flop and D flip flop.      15

12. (i) Design and explain the working of Binary address subtractor.      7.5

(ii) Summarize the design procedure for a combinational circuit.      7.5

13. (i) Define full subtractor with their working in detail. Draw the logic diagram.      7.5

(ii) Write note on multiplexer and demultiplexer.      7.5

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