A (Printed Pages 4)

(20622) Roll No.

BCA-II Sem.

18007

B.C.A. Examination, June-2022

DIGITAL ELECTRONICS AND COMPUTER ORGANISATION

(BCA-204)

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

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

Section-A

(Very Short Answer Questions)

Note : Attempt **all five** questions. Each question carries 3 marks. Very short answer is required not exceeding 75 words.

1. Write Demorgan's Laws. 3
2. Differentiate between flip flop and latches. 3

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3. Differentiate between combinational logic circuit and sequential circuits. 3
4. Construct half substractor using logic gates. 3
5. Draw the memory hierarchy structure and mark the arrow from low to high (Speed) & high to low (Cost). 3

Section-B

(Short Answer Questions)

Note : Attempt any **two** questions.

6. Minimize the following Boolean function using K-map-. 7½

   $F(A,B,C,D,)= \sum (3,4,5,7,9,13,14,15)$

7. (i) Convert the SR flip flop to JK flip flop draw the truth table of JK flip flop also. 5

   (ii) Implement 4:1 multiplexer using 2:1 multiplexer 2½

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8. (i) simplify the expression: 4

$F(A,B,C,D)=ACD+\bar{A}B+\bar{D}$ by K-map.

(ii) How many flip flops are needed to implement a 32 bit register. 3½

Section-C

(Detailed Answer Questions)

Note : Attempt any **three** questions.

9. (i) Which gates are called universal gates and why? 5

(ii) Draw a full substractor circuit using NAND gate. 10

10. What do you mean by shift register? What is the need of shift register? Draw & explain bidirectional shift register. 15

11. Draw and explain 4-bit binary synchronous counter. 15

12. (i) Differentiate between EPROM & EEPROM. 5

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(ii) Differentiate between SRAM & DRAM. 5

(iii) Differentiate between L_1 cache & L_2 cache. 5

13. (i) Differentiate between ROM & PROM. 3

(ii) Describe USB. 3

(iii) Differentiate between primary memory and secondary memory. Also list the examples of primary memory and secondary memory. 3

(iv) Explain the concept of Virtual memory. 3

(v) Draw basic cell of memory. 3

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