178341 36122

Reg. No. | | | | | | | | |

I Semester B.C.A. Degree Examination, August - 2021

COMPUTER SCIENCE

Computer Organizations

(CBCS Scheme 2019 Batch Onwards)

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates :

*Answer **All** the Sections.*

SECTION - A

I. Answer any **Ten** of the following questions . Each question carries **Two** marks. **(10×2=20)**

1. Define Minterm and Maxterm.
2. Define a 2 input XOR gate with truthtable and logic symbol.
3. Prove that $\left(\overline{BC}+C\right)=1$.
4. What is combination circuit? Give an example.
5. Define Toggling and Racing condition in JK flip-flop.
6. Simplify
   a) (11011+1001010)
   b) (101×11)
7. Convert $(10011)_2$ into Grey code.
8. Define operation code and operand.
9. Mention the phases in instruction cycle.
10. Explain the types of instruction formats.
11. Define auxiliary memory.
12. Mention the components of CPU.

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SECTION - B

II. Answer any **Five** of the following questions. Each question carries **Ten** marks. **(5×10=50)**

13. a) Explain universal property of NAND gate. **(5)**

    b) Simplify $F(A,B,C,D) = \{\sum_m(1,2,4,5,6,8,9) + \sum_d(10,11,14,15)\}$ using karnaugh map. **(5)**

14. a) Explain Half adder with a neat logic diagram. **(5)**

    b) Explain the working of a clocked SR flipflop. **(5)**

15. Convert the following **(10)**

    a) Decimal (41.6) to binary

    b) Octal (630.4) to decimal

    c) Hexadecimal (6E5) to decimal

    d) Binary (10001011110) to hexadecimal.

    e) Octal (742) to hexadecimal.

16. a) Explain the registers of basic computers. **(5)**

    b) Perform the following subtraction by using 2's complement method $(29)_{10}$-$(7)_{10}$ **(5)**

17. Explain common Bus system with a neat diagram. **(10)**

18. a) Explain the types of CPU organization. **(5)**

    b) Explain data transfer instructions. **(5)**

19. a) Explain memory hierarchy in computer system. **(5)**

    b) Explain cache memory. **(5)**

20. a) Write a note on main memory. **(4)**

    b) Explain the working of DMA with a neat diagram. **(6)**