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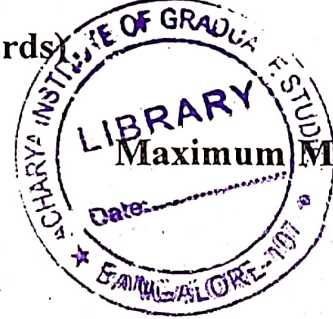
I Semester B.C.A. Degree Examination, April - 2022

COMPUTER SCIENCE

Computer Organization

Paper : BCA 104T

(CBCS Scheme 2019 onwards)



Time : 3 Hours

*Instructions to Candidates:*

Answer all the Sections.

## SECTION - A

I. Answer any ten of the following. Each question carries 2 marks.

(10×2=20)

1. Write logic symbol and truth table for AND and OR gate.
2. Define Flip - Flop.
3. Define Minterm and Maxterm.
4. Define LSB and MSB with examples.
5. Convert the following :  
673<sub>(10)</sub> to binary.  
742<sub>(8)</sub> to hexadecimal.
6. Define operation code and operand.
7. Perform subtraction using 2's complement  
11101<sub>(2)</sub> from 11001<sub>(2)</sub>.
8. What are the different phases of Instruction cycle?
9. Mention the components of CPU.
10. Explain types of RAM.
11. Define Cache Memory.
12. What is memory management system?

[P.T.O.]

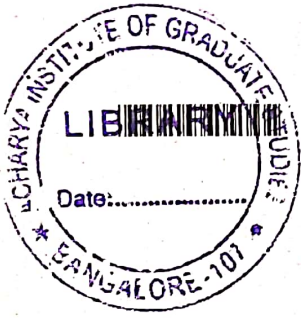




## SECTION - B

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

13. a. Explain Universal gates with a neat diagram and truth table. (5)  
b. Explain Block diagram of a digital computer. (5)
14. a. Write the K-map representation for the following and solve :  
$$F(A, B, C, D) = \sum (0, 1, 4, 5, 7, 15, 2, 10).$$
 (5)  
b. Explain half - adder with truth table and logic symbol? (5)
15. Convert the following : (10)  
a.  $51.68_{(10)}$  to  $(?)_2$ .  
b.  $(1011.101)_2$  to  $(?)_{10}$ .  
c.  $(FAC)_{16}$  to  $(?)_{10}$ .  
d.  $(11101011)_2$  to  $(?)_{16}$ .  
e.  $(610)_8$  to  $(?)_{16}$ .
16. a. Explain 1's complement method of subtraction. (5)  
b. Explain J-K Flip - Flop. (5)
17. a. Explain direct address and indirect address modes. (5)  
b. Explain types of instruction format. (5)
18. Explain the design of basic computer with flowchart. (10)
19. a. Write a note on ALU. (5)  
b. Explain Data Manipulation Instructions. (5)
20. a. Write a note on memory hierarchy in a computer system. (5)  
b. Write a short note on auxiliary memory. (5)
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I Semester B.C.A. Degree Examination, August - 2021

COMPUTER SCIENCE

Computer Organizations

(CBCS Scheme 2019 Batch Onwards)

17 AUG 2021

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 truth table and logic symbol.
3. Prove that  $(\overline{BC} + C) = 1$ .
4. What is combination circuit? Give an example.
5. Define Toggling and Racing condition in JK flip-flop.
6. Simplify
  - a)  $(11011+1001010)$
  - b)  $(101 \times 11)$
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.

[P.T.O.]





## 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  $F(A, B, C, D) = \left\{ \sum_m(1, 2, 4, 5, 6, 8, 9) + \sum_d(10, 11, 14, 15) \right\}$  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)

