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**BCACACN 101**

**First Semester B.C.A. Degree Examination, February/March 2023  
(NEP – 2020)  
(2021 – 22 Batch Onwards)  
FUNDAMENTALS OF COMPUTERS  
(DSCC)**

Time : 2 Hours

Max. Marks : 60

**Note :** Answer **any six** questions from Part – A and **any one** full question from **each** Unit in Part – B.

**PART – A**

**(6×2=12)**

1. a) What is Cache memory ?
- b) Differentiate RAM and ROM.
- c) Define System Software. Give example.
- d) Convert  $(AB2)_{16}$  to Binary and Octal.
- e) Write the BCD and Excess-3 Codes for 57.
- f) Write 1's and 2's Complement for  $(10101011)_2$ .
- g) Draw the logic circuit for  $F(x, y, z) = xy + x'z'$  using basic gate.
- h) Write the Truth Table and Logic expression of the OR gate.

**PART – B**

**Unit – I**

2. a) List and explain characteristics of Computer.
- b) Differentiate LCD and CRT monitors. **(6+6)**
3. a) Write an algorithm and flowchart to display the maximum of three numbers.
- b) Explain the applications of Computers in different fields. **(6+6)**

P.T.O.

**Unit – II**

4. a) What is System Utility ? Explain any five functions of System Utility.  
b) Write a note on :  
i) Word Processors  
ii) Spreadsheet Software (6+6)
5. a) Briefly explain different phases of the Program Development Cycle.  
b) Define Operating System. List and explain basic functions of an Operating System. (6+6)

**Unit – III**

6. a) State and prove any two theorems of Boolean algebra.  
b) Perform the subtractions  $272 - 354$  using 9's and 10's Complement Methods. (6+6)
7. a) State and prove distributive law using truth table.  
b) Using Boolean Theorems and postulates, prove  $x'y'z + x'yz + xy' = x'z + xy'$   
c) Perform the following subtraction using 1's complement method.  
 $(101011)_2 - (111001)_2$  (4+4+4)

**Unit – IV**

8. a) Express the Boolean function  $F(A, B, C) = A + B'C$  as sum of minterms and product of maxterms.  
b) Solve the expression  $F(A, B, C, D) = \sum(0, 2, 8, 10, 14) + \sum d(5, 15)$  using K-Maps and draw the logic diagram for minimized expression. (6+6)
9. a) Simplify the SOP expression  $F(A, B, C, D) = \sum(0, 2, 3, 5, 7, 8, 9, 10, 11, 13, 15)$  using K-Maps. Draw the logic diagram for the minimized expression.  
b) What are universal gates ? Prove that NAND is universal gate. (6+6)