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

BCACACN 101

First Semester B.C.A. Degree Examination, December 2023/January 2024
(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) Define Computer. Write any two applications of Computer.
   b) Write the differences between RAM and ROM.
   c) Define :
      i) Algorithm
      ii) Flowcharts.
   d) Differentiate compiler and interpreter.
   e) Write the BCD and Excess-3 Code for $458_{(10)}$.
   f) State the duality principle. Write the dual of
   $F(W,X,Y,Z) = X'YZ' + X'Y'Z + W'XY$
   g) Write the Truth Table and Logic Symbol of NOR gate.
   h) Write the general structure of 3 variables K-Map.

PART – B

UNIT – I

2. a) Explain any four characteristics of Computer.
   b) Write a note on :
      i) Keyboard
      ii) Trackpad
   c) What is cache memory ? Explain the different types of cache memory. **(4+4+4)**

P.T.O.

3. a) Explain the characteristics of Third-Generation Computers.
   b) Draw the block diagram of a Computer System and explain any two components of a Computer System.
   c) Differentiate LCD and CRT monitors. **(4+4+4)**

UNIT – II

4. a) What is Application Software ? Explain the following Application Softwares.
      i) Word Processor ii) Image Editor.
   b) Explain any three symbols used to draw flowchart with its meaning. Write the flowchart to find the factorial of a number. **(6+6)**

5. a) Briefly explain different phases of the Program Development Cycle with block diagram.
   b) Write the desirable features of algorithm. Write an algorithm to display maximum of three numbers. **(6+6)**

UNIT – III

6. a) Perform the following conversion
      i) $BCA_{(16)} = (\quad)_{(10)}$ ii) $712.45_{(10)} = (\quad)_{(2)}$
   b) State any four postulates of Boolean algebra.
   c) Perform $100.10_{(2)} - 111.11_{(2)}$ using 1's complement method. **(4+4+4)**

7. a) Perform the following conversion
      i) $10101.11_{(2)} = (\quad)_{(10)}$ ii) $450.65_{(10)} = (\quad)_{(8)}$
   b) Prove any four theorems of Boolean algebra.
   c) Perform $4750_{(10)} - 950_{(10)}$ using 10's complement method. **(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) What are universal gates ? Prove that NAND is universal gate. **(6+6)**

9. a) Implement Boolean function F = xy + x'y' + y'z with basic gates and also write the truth table.
   b) Simplify using K-map
      $F(A, B, C, D) = \Sigma(0,2,3,4,7,8,11) + \Sigma d(1,6,10,15)$. **(6+6)**