7480

Code : 20CS11T

Register Number	3	9	3	C	1	2	0	0	0	9

I Semester Diploma Examination, February/March-2023

FUNDAMENTALS OF COMPUTER

Time : 3 Hours] **[Max. Marks : 100**

Instructions : (i) Answer **one** full question from each section.
(ii) One full question carries **20** marks.

SECTION – I

1. (a) Define number system. Explain different types of number systems with examples. **10**
   (b) Convert the following : **5**
   (i) $(671)_{10} = (\quad)_2$
   (ii) $(FD)_{16} = (\quad)_{10}$
   (c) (i) Find 1's complement of $11000011111_{(2)}$ **5**
   (ii) Find 2's complement of $11000100_{(2)}$

2. (a) List & explain universal gates with logic symbol, expressions & truth table. **10**
   (b) Develop a truth-table for 3-input AND gate. **5**
   (c) Perform the following : **5**

   (i) $1100_{(2)} + 1001_{(2)}$

   (ii) $1101_{(2)} + 1010_{(2)}$

SECTION – II

3. (a) State & prove De Morgan's theorem using truth table. **5**
   (b) Describe half adder with logic diagram and truth table. **5**
   (c) Differentiate between multiplexer & demultiplexor. **6**
   (d) Write ASCII equivalent for the following words : **4**
   Program (**Hint** : 'A' = 65)

4. (a) Define flip flop. List different types of flip flops. **5**
   (b) Describe 4 : 1 multiplexer with logic circuit & Truth table. **5**
   (c) Differentiate between combinational circuits & sequential circuits. **6**
   (d) Apply Boolean algebra rules/laws and prove (A+B) (A+C) = A + BC. **4**

SECTION – III

5. (a) Define encoder. Explain Decimal to BCD Encoder with block diagram and logic diagram. 6

(b) Discuss the applications of counters. 4

(c) Construct 4-bit SISO (Serial In Serial Out) shift register with neat block diagram. 6

(d) Illustrate 4-bit comparator with block diagram. 4

6. (a) Define computer network. Explain different categories of network. 6

(b) Distinguish between Open Source software & proprietary software. 4

(c) Illustrate the working of Keyboard with neat diagram. 6

(d) Classify data processing methods according to number of users. 4

SECTION – IV

7. (a) List & explain different generation of computers. 10

(b) Differentiate between multitasking operating system & multiprocessing operating system. 4

(c) Arrange different types of memory in hierarchy of increasing access speed & cost. 6

8. (a) Explain various functional units of computer with neat diagram. 10

(b) Classify computers based on Flynn's classification. 4

(c) Differentiate between BIOS & UEFI. 6

SECTION – V

9. (a) Define auxillary memory. Explain the characteristics of auxillary memory. 5

(b) Explain stored program concept. 5

(c) Design a flowchart to determine whether a given number is even or odd. 5

(d) A user enters the input. Write an algorithm to check whether entered input is a character or a number. 5

10. (a) Draw any 5 symbols used in flowchart. 5

(b) Define variable. Mention the rules for naming variable. 5

(c) Write an algorithm to find the area of a triangle with its base and height as input. 5

(d) Draw a flowchart to accept the age of a person & check whether he/she is eligible to vote. A person can vote if age is greater than or equal to 18. A person cannot vote if age is less than 18. 5