7480

Code : 20CS11T

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

(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 $11000100_{(2)}$

(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) $1100_{(2)}$ (ii) $1101_{(2)}$

        $+1001_{(2)}$ $+1010_{(2)}$

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SECTION – II

(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)

(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.

    (b) Discuss the applications of counters.

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

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

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

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

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

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

SECTION – IV

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

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

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

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.

SECTION – V

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

    (b) Explain stored program concept.   5

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

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

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

    (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