

**Makeup Examination – Sept. 2023
I Semester Diploma Examination**

FUNDAMENTALS OF COMPUTER (20CS11T)

Exam Date / Time: 20th Sep. 2023 / 2.00 PM

Time: 3 Hours

Max.Marks: 100

- Instructions:** (1) Answer one full question from each section.
(2) One full question carries 20 marks.

SECTION - I

1. a) Define number system? Explain the characteristics of number system. **10**
b) Convert the following: **6**
i) Binary to Decimal : $(11101)_2$
ii) Decimal to Binary: $(456)_{10}$
iii) Decimal to Octal : $(567)_{10}$
c) i) Find 1'S complement of 11000011111_2
ii) Find 2'S complement of 11000100_2 **4**
2. a) Explain the following terms: **10**
i) BCD
ii) EBCDIC
iii) ASCII
iv) UNICODE
v) GRAY CODE
b) Define Logic gates. Explain universal gates with logic symbol, expressions and truth table. **10**

SECTION - II

3. a) State the Laws and Rules of Boolean algebra. **10**
b) Describe full adder with logic diagram and truth table. **10**
4. a) List the different types of Flip-flops. **4**
b) Describe 4:1 multiplexer with logic circuit and truth table. **6**

- c) Differentiate between combinational circuit and sequential circuit. 6
- d) Apply Boolean algebra rules/laws and prove $(A+B)(A+C) = A + BC$ 4

SECTION – III

5. a) Construct a 4-bit SIPO (Serial in Parallel Out) shift register with logic circuit. 10
- b) Discuss the applications of counters. 5
- c) Illustrate 4-bit comparator with block diagram. 5
6. a) List and explain different generation of computers. 10
- b) List any FIVE applications of computers. 5
- c) Illustrate the working of keyboard with a neat diagram. 5

SECTION – IV

7. a) Define Computer network. Explain the different categories of computer network. 10
- b) Arrange different types of memory in hierarchy of increasing access of speed and cost. 6
- c) Differentiate between multi user operating system and multiprocessor operating system. 4
8. a) List and explain Flynn's Classification of Computers. 5
- b) Differentiate between BIOS and UEFI. 5
- c) Explain the functional units of computer with a neat diagram. 10

SECTION – V

9. a) Define variable. Mention the rules of naming variables. 5
- b) Raj has to reach his college at 9:00 am. If he leaves his house before 8:00 am, he will go by walk, otherwise he takes a bus. Draw a flow chart for this given Scenario, to output how to travel. 5
- c) Explain the stored programming concept. 5
- d) A user enters the input. Write an algorithm to check whether entered input is a character or a number. 5
10. a) Define FLOW chart. Explain the different symbols used in flow chart. 10
- b) 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
- c) Write an algorithm to find the area of a triangle with its base and height as input. 5