

Register  
Number

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Code: 20CS11T

I Semester Diploma Examination, Nov/Dec 2024

## FUNDAMENTALS OF COMPUTER

TIME: 3 HOURS

MAX MARKS: 100

### Instructions:

- (i) Answer any one full question from each section - I, II, III, IV and V.
- (ii) Each one full question carries 20 marks.

### SECTION - I

- 1. a) Explain different types of number system. 10
- b) Convert the following: 6
  - i)  $(1101101)_2$  to decimal
  - ii)  $(19)_{10}$  to binary
- c) Explain ASCII code with an example. 4
- 2. a) Explain NAND and NOR gates with truth table & logic diagram. 10
- b) List five rules of Boolean Algebra. 5
- c) State and prove DeMorgan's first theorem. 5

### SECTION - II

- 3. a) Explain working of full adder with truth table, logic symbol and logic circuit diagram. 10
- b) i) Find 1's complement of  $(10111010)_2$  5
- ii) Find 2's complement of  $(1011)_2$
- c) List different types of flip flops. 5
- 4. a) Explain working of 4:1 multiplexer. 10
- b) List the laws of Boolean algebra with expressions. 5
- c) List applications of Counters. 5

### SECTION - III

- 5. a) Construct 4 bit SISO shift register. 10
- b) Explain functional units of a computer with a neat diagram. 10
- 6. a) List the applications of Decoder. 5
- b) Write differences between Combinational and Sequential circuits. 5
- c) Describe working of keyboard with a diagram. 10

### SECTION - IV

- 7. a) Define Computer Network. List different categories of computer networks. 5
- b) Define Operating System. Explain any two types of operating systems. 10
- c) Differentiate between UEFI and BIOS. 5
- 8. a) Explain memory hierarchy with a diagram. 10
- b) Explain any five functions of operating systems. 5
- c) List any five applications of Computer. 5

### SECTION - V

- 9. a) List different flowchart symbols with symbol names. 5
- b) Explain any five rules for defining variable names. 5
- c) Write an algorithm and draw a flowchart to find largest of 2 numbers. 10
- 10. a) Identify the following as valid or invalid variable names by applying variable naming rules: 5
  - i) x6 ii) 6xyz iii) Program iv) prog\*1 v) prog\_2
- b) Explain Stored program concept. 5
- c) Write an algorithm and draw a flowchart to find if a given number is odd or even. 10