

(FOR THE CANDIDATES ADMITTED

SUBJECT CODE **24 UCT102**

DURING THE ACADEMIC YEAR 2024-25 ONLY)

REG.NO.

**N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI**

**END-OF-SEMESTER EXAMINATIONS : NOVEMBER – 2024**

**B.Sc. – COMPUTER TECHNOLOGY**

**MAXIMUM MARKS: 75**

**I SEMESTER**

**TIME : 3 HOURS**

**PART – III**

**DIGITAL FUNDAMENTALS AND COMPUTER ORGANIZATION**

**SECTION – A**

**(10 X 1 = 10 MARKS)**

**ANSWER THE FOLLOWING QUESTIONS.**

**(K1)**

**MULTIPLE CHOICE QUESTIONS.**

1. Which of these number systems has a base of 16?  
a) Decimal                      b) Binary                      c) Hexadecimal                      d) Octal
2. Which of these sets of logic gates are known as universal gates?  
a) XOR, NAND, OR                      b) OR, NOT, XOR  
c) NOR, NAND, XNOR                      d) NOR, NAND
3. \_\_\_\_\_ is a digital circuit that is capable of storing only a single bit.  
a) Flip-flop                      b) NOR gate                      c) XOR gate                      d) Register
4. \_\_\_\_\_ register holds the address for a stack whose value is supported to be directed at the topmost position.  
a) Instruction Register                      b) Accumulator  
c) Stack Pointer                      d) Index Register
5. The Memory implemented using the semi conductor chip is \_\_\_\_\_  
a) Cache                      b) Main Memory  
c) Secondary Memory                      d) Registers

**ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES.**

**(K2)**

6. What is the addition of these binary numbers 101001+ 010011?
7. If the two inputs are 00 then the OR gate output will be?
8. How many outputs do full adder logic circuits will have?
9. Expand: RISC
10. What is the high speed memory between the main memory and the CPU called?

**(CONTD .... 2)**

**SECTION – B****(5 X 5 = 25 MARKS)****ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)**

11. a) Describe the Excess 3 code.

**(OR)**

- b) i) Convert the octal number  $(137.21)_8$  to decimal.  
ii) Convert the Hexa decimal number  $(1E0.2A)_{16}$  to decimal.

12. a) Describe the logic gates with truth table.

**(OR)**

- b) What are the De Morgan's theorems?

13. a) What is a half Adder?

**(OR)**

- b) What is a full subtractor?

14. a) Write short notes on stack organization.

**(OR)**

- b) What are the registers in CPU?

15. a) What is an auxiliary memory?

**(OR)**

- b) Describe Cache memory.

**SECTION – C****(5 X 8 = 40 MARKS)****ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.****(K4/K5)**

16. a) Discuss parity method for error detection and correction.

**(OR)**

- b) Explain the BCD and Gray Code.

17. a) How will you Minimize the Sum of Product form using Karnaugh map?

**(OR)**

- b) How will you Minimize the Product of Sum form using Karnaugh map ?

18. a) Discuss the Flip flops in detail.

**(OR)**

- b) Explain the multiplexor in detail.

19. a) Discuss RISC.

**(OR)**

- b) What are the data transfer and manipulation operations?

20. a) Explain the concept of virtual memory.

**(OR)**

- b) Discuss the structure of associative memory.