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(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2022-23 ONLY)

SUBJECT CODE 22 UCT 102

REG.NO. :

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

END-OF-SEMESTER EXAMINATIONS : DECEMBER – 2022

B.Sc. – COMPUTER TECHNOLOGY **MAXIMUM MARKS: 50**

I SEMESTER **TIME : 3 HOURS**

PART – III

DIGITAL FUNDAMENTALS AND COMPUTER ORGANIZATION

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

MULTIPLE CHOICE QUESTIONS. (K1)

1. ASCII stands for _____.
   a) American Standard Code for Information Interchange
   b) All-purpose Scientific Code for Information Interchange
   c) American Security code for Information Interchange
   d) American Scientific Code for Information Interchange
2. Which of the following is termed as Universal logic gate?
   a) OR b) AND c) NAND d) EX-OR
3. Which of the following circuit is used to store one bit of data?
   a) Flip Flop b) Decoder c) Encoder d) Register
4. In stack organization, the insertion operation is known as _____.
   a) Pop b) Push c) Peek d) Top
5. Which of the following is fastest memory?
   a) Secondary Memory b) Cache Memory
   c) Auxiliary Memory d) Virtual Memory

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES. (K2)

6. How to determine 10's Complement of a number?
7. What is Boolean algebra?
8. List any one application of the register.
9. What is a program counter?
10. Infer the purpose of virtual memory.

SECTION – B (5 X 3 = 15 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. a) Enlist and explain the 5 rules of binary addition.

(OR)

b) Find 10's complement of the number 1423.

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12. a) State and prove De Morgan's theorems using truth-tables.

(OR)

b) Compare Canonical and Standard forms of Boolean functions.

13. a) Distinguish between half adder and full adder.

(OR)

b) With a neat block diagram explain the function of the encoder.

14. a) Categorize and explain data manipulation instructions.

(OR)

b) Determine the type of interrupts that can cause break in the normal execution of a program.

15. a) Distinguish between RAM and ROM.

(OR)

b) Examine and explain the block diagram of an associative memory in brief.

SECTION – C (5 X 5 = 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.

(K4 / K5)

16. a) Convert the Decimal number 125 to Binary, Octal and Hexadecimal.

(OR)

b) Elucidate error detection and correction techniques with necessary examples.

17. a) Discuss Universal gates. Obtain AND, OR, NOT, EX-OR gate using NAND and NOR gates.

(OR)

b) Demonstrate simplification of SOP expression using K-map with an example.

18. a) Explain working of master-slave JK flip-flop with necessary diagram, state equation and state diagram.

(OR)

b) Differentiate between Multiplexer and Demultiplexer.

19. a) What are instruction formats? Explain direct and indirect address instruction with suitable example.

(OR)

b) What do you mean by addressing mode? Enlist and explain addressing modes with their advantages and disadvantages.

20. a) Illustrate cache memory organization with necessary diagrams.

(OR)

b) Is memory unit an essential component in any digital computer? If so, justify your answer.

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