St. Claret College

Roll No:
Date:

Autonomous, Bengaluru

UG END SEMESTER EXAMINATION-DECEMBER 2024
BCA - I SEMESTER
CA 1224: COMPUTER ARCHITECTURE

TIME: 3 hours.   9   MAX. MARKS: 80

This paper contains TWO printed pages and FOUR parts

Instructions:

1. Verify and ensure that the question paper is completely printed.

2. Any discrepancies or questions about the exam paper must be reported to the COE within 1 hour after the examination.

3. Students must check the course title and course code before answering the questions.

PART-A

Answer ALL questions. Each answer carries ONE mark.   [10 x 1 = 10]

1. Which following gates are known as Universal gates?
   a) NOR   b) XOR   c) NAND   d) Both a & c

2. What is the gray code for 1010 binary number?
   a) 1010   b) 1100   1110)   d) 1111

3. Convert the decimal number 10001.25 to binary number.
   a) 10011100010001.01   b) 100101010001.01   c) 100110110101.01   d) 10001.01

4. How many bits program counter is available in 8085?
   a) 4-bit   b) 8-bit   c) 16-bit   d) 32-bit

5. The 8085 microprocessors have
   a) 16-bit data bus & 8-bit address bus   b) 8-bit data bus & 16-bit address
   c) 8-bit data bus & 8-bit address   d) None of these

6. The highest priority interrupt in 8085 is
   a) RST 5.5   b) RST 6.5   c) RST 7.5   d) TRAP

7. Which of the following mode of operations is not a part of a shift register?
   a) SISO   b) SIPI   c) PISI   d) Both b & c

8. Which of the following commands are part of I/O command?
   a) Control Command   b) Status Command   c) Both a & b   d) None of these

9. Multiplexer receives information from one of __ data line and directs that to __ line.
   a) n input and 1 output   b) 2^n and n output   c) 2^n input and 1 output   d) None of these

10. The number of gates in Medium Scale Integration (MSI) are
    a) Less than 10   b) 200 to few thousand   c) Both a & b   d) None of these

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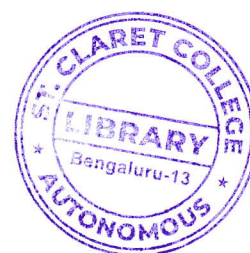
PART-B

Answer any five questions. Each answer carries two marks. [5 x 2= 10]

11. Define Computer Architecture and its types.
12. Perform addition 678 + 535 in Binary Coded Decimal.
13. What is microprocessor? Define two applications of microprocessor.
14. What is interrupt in 8085? Define different types of interrupt.
15. Define different types of computer register.
16. Define different types of data transfer instruction.
17. Draw the truth table for octal to binary encoder.

PART-C

Answer any FOUR questions. Each answer carries FIVE marks. [4 x 5 = 20]

18. Illustrate digital computer with a block diagram.
19. Differentiate JNC and JC with suitable 8085 programs.
20. Draw the pin diagram of 8085 microprocessor and illustrate the signals.
21. Draw a flowchart for a basic computer operation.
22. Explain DMA controller with block diagram.
23. Illustrate sequential circuit with input equations, state table and state diagram.

PART-D

Answer any FOUR questions. Each answer carries TEN marks. [4 x 10 = 40]

24. a) Convert the following function in sum of product simplification and product of sum using map simplification. (7+3)

    $F (W, X, Y, Z) = \sum (0,1,2,5,8,9,10)$

    b) Draw the circuit diagrams for the result of SOP and POS.

25. Briefly, explain the architecture of 8085 microprocessor with block diagram.
26. a) Explain 8085 Programming Model. (5+5)
    b) Illustrate different addressing modes in 8085.
27. a) Illustrate common bus system with neat diagram. (7+3)
    b) Differentiate RISC and CISC.
28. a) Explain DMA Transfer with block diagram. (6+4)
    b) Write a short note on CPU and its types.
29. a) Illustrate RS and JK flip flops with graphic symbol and characteristic table. (4+6)
    b) Explain 3 X 8 line decoder.