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I Semester M.C.A. Degree Examination, June/July - 2023

**COMPUTER SCIENCE**

**Computer Organization and Architecture**

(CBCS Y2k20 Scheme)

Paper : IMCA3

Time : 3 Hours

Maximum Marks : 70

**Instructions to Candidates:**

Answer any Five questions from Part - A

Answer any Four questions from Part - B

**PART - A**

Answer any Five questions.

(5×6=30)

1. Explain Von-Nuemann Architecture with a neat diagram. (6)
2. Differential between RISC and CISC. (6)
3. Subtract  $24_{(10)}$  from  $14_{(10)}$  Using 2's Complement Method. (6)
4. Explain Error Detector Using Hamming Code. (6)
5. Explain addressing models and its types. (6)
6. Explain the working of half adder and full adder, with a neat circuit diagram. (6)
7. Explain Instruction Level Parallelism. (6)
8. Explain Virtual Memory. (6)

**PART - B**

Answer any Four questions.

(4×10=40)

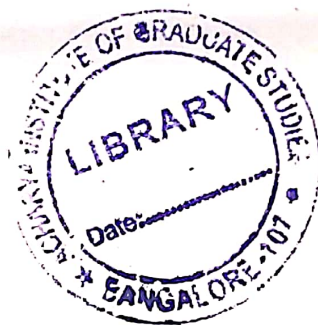
9. a) Simplify:  
 $F(A,B,C,D) = \sum m(0,1,2,3,4,5) + d(10,11,12,13)$  in SOP minimal form. (5)
- b) Analyse booth multiplication algorithm with flow chart, hardware implementation with an example. (5)
10. a) Explain Arithmetic Logic shift unit. (5)
- b) Explain the different registers in basic computer. (5)

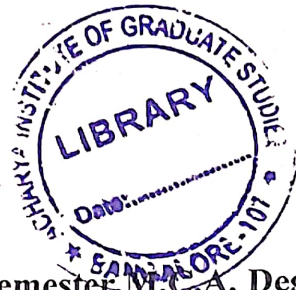
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11. a) Explain Interrupt cycle with flow chart. (5)  
b) Explain different types of ROMs. (5)
12. a) Explain the working of DMA data transfer with a neat block diagram. (5)  
b) Explain different instruction formats with an example for each. (5)
13. a) What is memory mapped I/o and Program controlled I/O. (5)  
b) Explain binary counter. (5)
14. Write short note on:
- a) MIMD Architecture (5)  
b) Inter Process communication. (5)





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I Semester M.C.A. Degree Examination, July - 2022

COMPUTER SCIENCE

Computer Organization and Architecture

(CBCS 20-21 Scheme)

Paper : 1MCA3

Time : 3 Hours

Maximum Marks : 70

**Instruction to Candidates:**

- 1) Answer any **Five** questions from Section A, each carries **Six** marks.
- 2) Any **Four** questions from Section B, each carries **Ten** marks.

**SECTION - A****I. Answer any FIVE of the following questions. Each carries 6 marks. (5×6=30)**

1. Convert  $(FADE)_{16}$  into decimal, octal and binary number system.
2. With a neat diagram explain Von-Neuman architecture.
3. Subtract  $73_{(10)}$  from  $28_{(10)}$  using 2's complement method.
4. Explain the different instruction formats.
5. Write a note on RISC and CISC.
6. Explain instruction level parallelism and its limitations.
7. Explain the characteristics of multiprocessor.
8. Explain virtual memory.

**SECTION - B****II. Answer any Four Full questions. (4×10=40)**

9. a) With a neat circuit diagram and truth table, explain the working of full adder. (5)
- b) Simplify  $F(ABCD) = \sum m(1,2,6,11,15) + \sum d(0,3,9,10,14)$  using k map and write the circuit diagram for the simplified expression. (5)

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10. a) Explain error detection using Hamming code. (5)  
b) Explain binary counter. (5)
11. a) With a neat circuit diagram explain the working of JK flip flop. (5)  
b) Explain interrupt cycle with a neat flow chart. (5)
12. a) Explain memory reference instruction and register reference instruction with an example. (5)  
b) What is memory-mapped I/o and program controlled I/o. (5)
13. a) Define addressing mode and explain any 4 addressing mode. (5)  
b) Explain the block diagram of DMA Controller. (5)
14. a) Explain MIMD architecture. (5)  
b) What is inter process communication ? Explain shared memory method of process communication. (5)

