U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

December 2023 Supplementary Examinations

Programme: B.E. **Semester: III**
Branch: Computer Science and Engineering **Duration: 3 hrs.**
Course Code: 22CS3PCCOA **Max Marks: 100**
Course: Computer Organization and architecture

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

1	a)	Explain basic operational concepts with diagram showing the connection between Processor and Memory.	**10**
	b)	Define Addressing mode. List any five addressing modes and explain with suitable examples.	**10**

UNIT - II

2	a)	Explain Stack Frame.	**5**
	b)	With necessary diagram explain input operation in handshake mode.	**5**
	c)	Write an assembly language program to read a line of text and print it using program controlled I/O.	**10**

UNIT - III

3	a)	With neat diagram explain internal organization of 1Kx1 memory chip with necessary decoder and multiplexer.	**10**
	b)	Explain different Cache mapping techniques.	**10**

OR

4	a)	List different types of Read Only Memories (ROM) and explain.	**6**
	b)	Explain static RAM cell with neat diagram.	**4**
	c)	Design a memory of size 2Mx32 using 512Kx8 Memory chips. Show the design with neat and complete diagram.	**10**

UNIT - IV

5	a)	Apply normal Booth multiplication algorithm and solve (i) 13(multiplicand) and -6 (multiplier) (ii) 23 (multiplicand) and -9 (multiplier)	**10**
	b)	Perform division operation using Restoring methods for the following (i) Dividend (8) = (1000) Divisor (3) = (0011)	**10**

OR

6	a)	Apply Booth Bit-pair recording algorithm and multiply the following: i. -13(Multiplicand) and -20 (Multiplier) ii. +23 (Multiplicand) and -10 (Multiplier)	**10**
	b)	Design and describe the working of a 4-bit carry look-ahead adder	**10**

UNIT - V

7	a)	Considering five-stage datapath in a processor, write sequence of actions needed to fetch and execute the following instructions i. Add R3, R2, R1 ii. Store R6, X(R8)	**10**
	b)	Discuss the operation of hardwired control unit with suitable diagram	**10**

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