Total No. of Questions: 6 *Total No. of Printed Pages:2*

Enrollment No.....

Faculty of Science

End Sem (Even) Examination May-2022

CA3CO06 Computer Architecture

Programme: BCA / BCA+MCA (Integrated) Branch/Specialisation: Computer Application

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. Which registers of the processor are connected to memory bus? **1**
(a) PC (b) MAR (c) Both (a) and (b) (d) IR

ii. The ALU of a computer responds to the commands coming from- **1**
(a) Primary memory (b) Control section
(c) External Memory (d) All of these

iii. Floating point representation is used to store- **1**
(a) Boolean values (b) Whole numbers
(c) Real Integers (d) Integers

iv. The sign magnitude representation of -9 is _____. **1**
(a) 00001001 (b) 11111001
(c) 10001001 (d) 11001

v. RTL stands for- **1**
(a) Random transfer language
(b) Register transfer language
(c) Relay transfer language
(d) All of these

vi. The register for the program counter is signified as_____. **1**
(a) MAR (b) IR (c) PC (d) None of these

vii. The instructions like MOV or ADD are called as _____. **1**
(a) OP-Code (b) Operators (c) Commands (d) None of these

viii. Which of following is not general-purpose register of 8086/8088? **1**
(a) Code Segment (b) Data Segment
(c) Stack Segment (d) Address Segment

ix. The cells in each column are connected to _____ **1**
(a) Capacitor (b) Data line (c) Read line (d) Sense/Write line

x. Which of the following memories must be refreshed many times per second? **1**
(a) SRAM (b) DRAM (c) EPROM (d) ROM

Q.2 Attempt any two:

i. What is a computer? Draw a block diagram of a simple computer with peripherals. **5**

ii. Give two criteria for instruction set design. Also discuss instruction set format. **5**

iii. Discuss features of Instruction Set Architecture. "Computer is dumb machine" Justify this statement. **5**

Q.3 i. Explain single precision floating point representation and represent $(6.25)_{10}$ in single precision format. **2**

ii. Discuss booth's algorithm with the help of flowchart and one example. **8**

OR iii. Explain restoring division algorithm method with one example. **8**

Q.4 i. What is micro-operation? Discuss three different types of micro-operation with one example. **4**

ii. Design a 4-bit arithmetic circuit also mention function table for arithmetic micro-operation. **6**

OR iii. Explain bus system for four registers using multiplexer. **6**

Q.5 Attempt any two:

i. What are addressing modes? Explain any four addressing modes of 8086 microprocessor. **5**

ii. What are data transfer Instruction? Also give any two examples of arithmetic instruction and bit manipulation instruction. **5**

iii. Draw and explain pin diagram of 8086. **5**

Q.6 Attempt any two:

i. Explain memory hierarchy with help of diagram. **5**

ii. Draw and explain memory chip organization of RAM. **5**

iii. Explain the following: **5**
(a) Cache Memory (b) Auxiliary Memory

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Marking Scheme CA3CO06 Computer Architecture

Q.1	i.	Which registers of the processor are connected to memory bus? (b) MAR		**1**
	ii.	The ALU of a computer responds to the commands coming from- (b) Control section		**1**
	iii.	Floating point representation is used to store- (c) Real Integers (d) Integers		**1**
	iv.	The sign magnitude representation of -9 is _____. (c) 10001001 (d) 11001		**1**
	v.	RTL stands for- (b) Register transfer language		**1**
	vi.	The register for the program counter is signified as_____. (c) PC		**1**
	vii.	The instructions like MOV or ADD are called as _____. (a) OP-Code		**1**
	viii.	Which of following is not general-purpose register of 8086/8088? (d) Address Segment		**1**
	ix.	The cells in each column are connected to _____ (d) Sense/Write line		**1**
	x.	Which of the following memories must be refreshed many times per second? (b) DRAM		**1**
Q.2		Attempt any two:		
	i.	What is a computer	2 Marks	**5**
		Diagram	1 Mark	
		Explanation	2 Marks	
	ii.	Criteria	2 Marks	**5**
		Instruction set format.	3 Marks	
	iii.	Features	3 Marks	**5**
		Justification	2 Marks	
Q.3	i.	Explanation	1 Mark	**2**
		Solution	1 Mark	
	ii.	Discussion	3 Marks	**8**
		Flowchart	3 Marks	
		Example.	2 Marks	
OR	iii.	Discussion	3 Marks	**8**
		Flowchart	3 Marks	
		Example.	2 Marks	

Q.4	i.	Definition 3 types of micro-operation	1 Mark 1 Mark each (1 Mark*3)	**4**
	ii.	Diagram Function table Explanation	1 Mark 2 Marks 3 Marks	**6**
OR	iii.	Explanation Diagram	4 Marks 2 Marks	**6**
Q.5		Attempt any two:		
	i.	Definition 4 addressing modes	1 Mark 1 Mark each (1 Mark*4)	**5**
	ii.	Definition 2 examples	1 Mark 2 Marks each (2 Marks*2)	**5**
	iii.	Diagram Explanation	1 Mark 4 Marks	**5**
Q.6		Attempt any two:		
	i.	Diagram Explanation	1 Mark 4 Marks	**5**
	ii.	Diagram Explanation	1 Mark 4 Marks	**5**
	iii.	(a) Cache Memory Diagram Explanation (b) Auxiliary Memory Diagram Explanation	 1 Mark 1.5 Marks 1 Mark 1.5 Marks	**5**

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