SVKM'S NMIMS

MUKESH PATEL SCHOOL OF TECHNOLOGY MANAGEMENT& ENGINEERING

Academic Year: 2022-2023

Program/s: B.TECH /MBA TECH

Year: II Semester: IV

Stream/s: COMPUTER

Subject: Computer Organization and Architecture

Time: 03 hrs (10:00am to 1:00pm)

Date: 01 / 07 / 2023

No. of Pages: 02

Marks:100

Re-Examination

Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover of the Answer Book, which is provided for their use.

1) Question No. **1** is compulsory.
2) Out of remaining questions, attempt any **4** questions.
3) **In all 5 questions to be attempted.**
4) All questions carry equal marks.
5) **Answer to each new question to be started on a fresh page.**
6) **Figures in brackets on the right-hand side indicate full marks.**
7) **Assume Suitable data if necessary.**

Q1.		**Answer briefly:**	
CO-1, SO-1, BL-1	a.	Define computer architecture and highlight its importance.	[5]
CO-1, SO-1, BL-1	b.	What is Bus arbitration technique? List down its types.	[5]
CO-1, SO-1, BL-2	c.	Describe Von-Neuman architecture with suitable diagram.	[5]
CO-1, SO-1, BL-4	d.	Compare and contrast RISC and CISC.	[5]
Q2.			
CO-1, SO-1, BL-2	a.	What is the role of addressing mode? List its types and explain any five of them with suitable example.	[10]
CO-3, SO-1, BL-2	b.	Draw the architecture Diagram of 8086 Processor and discuss various components of 8086 processor.	[10]
Q3.			
CO-1, SO-1 BL-2	a.	Illustrate with necessary diagram, the operation of a Hardwired control unit.	[10]
CO-1, SO-1 BL-2	b.	What is an instruction cycle? Illustrate the instruction fetch cycle in detail.	[10]

Q4.			
CO-2, SO-1 BL-2	a.	Discuss set associative-mapping technique in detail.	[10]
CO-3, SO-1 BL-6	b.	Draw the flowchart of Booth's algorithm and Multiply (-10) and (-4) using Booth's algorithm. Consider the count value as 4.	[10]
Q5.			
CO-2, SO-1 BL-2	a.	Sketch and explain computer memory hierarchy.	[10]
CO-3, SO-1 BL-6	b.	How do we represent the floating-point number in IEEE 754 format? Represent the number "85.125" in single precision format.	[10]
Q6.			
CO-3, SO-1 BL-2	a.	With the help of suitable diagrams and examples explain the Combinational circuits based ALU.	[10]
CO-3, SO-1 BL-2	b.	What is a bus? What are its functions? Draw and explain the bus-architecture and its interconnections.	[10]
Q7.			
CO-4, SO-1 BL-2	a.	Briefly explain the superscalar architecture with suitable diagrams. Also list its advantages and disadvantages.	[10]
CO-1, SO-1 BL-2	b.	What do you mean by the functional units of a digital system? Explain any two units in detail.	[10]