SVKM'S NMIMS

MUKESH PATEL SCHOOL OF TECHNOLOGY MANAGEMENT& ENGINEERING/

SCHOOL OF TECHNOLOGY MANAGEMENT

Academic Year: 2023-2024

Program/s: MBA Tech/ B.Tech/B.Tech (Integrated) Year: II/IV Semester: IV/VIII

Stream/s; Computer Engineering

Subject: Microprocessor and Microcontroller Time: 03 hrs (10:00am to 1:00pm)

Date: 25 / 06 / 2024 No. of Pages: 02

Marks: 100

Re-Examination (2022-23/2021-22) 2023-24

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-2,3	a.	What is the size of address bus and data bus in 8086 microprocessor? In 8086, the content of *segment: offset* is 0400h: 0109H. Determine physical memory address.	[04]
CO- 2; SO-1; BL-2	b.	What are the steps an 8086 microprocessor will take when it responds to an interrupt?	[04]
CO- 2; SO-1; BL-1	c.	Write Data types supported by 8087 co-processor.	[04]
CO-3; SO-4; BL-3	d.	Identify the addressing modes of the following instructions: i. MOV A,46h ii. MOV A,#46h iii. ADD A,#46h iv. MOV @R1,A	[04]
CO-4; SO-1; BL-1	e.	Write short note on PIC microcontrollers.	[04]
Q2			
CO-1; SO-1; BL-2,4	A	Describe the key components and connections involved in the minimum mode configuration of the 8086 microprocessor, with help of neat and labeled diagram?	[10]
CO-2; SO-1; BL-2	B	Define coprocessor. Explain registers of 8087 coprocessor.	[10]

Q3			
CO-1; SO-1; BL-1	A	Describe the programmer's model of the 8086 microprocessor and provide its diagrammatic representation with label.	[10]
CO-2; SO-1; BL-2	B	What is the purpose of Interrupt Vector Table (IVT) in an 8086 based system? Draw the IVT and explain how the CS: IP values of an interrupt service routine are calculated.	[10]
Q4			
CO-2; SO-4; BL-3	A	Write 8086 assembly language program with comment for multi-byte addition of data: 12 34 56 78H + 9A BC 5E F0H Assume source registers, destination register or memory location as per your requirement.	[10]
CO-3; SO-1; BL-2	B	Explain different memory spaces of 8051. Give the different address range of RAM locations used in internal RAM for different memory spaces.	[10]
Q5			
CO-2; SO-1; BL-2	A	Describe addressing modes of 8086 microprocessor with example.	[10]
CO-3; SO-4; BL-3	B	Write 8051 assembly language program with comment to receive bytes of data serially in 8-bit UART mode at 4800 baud rate, and put them in P1. Assume XTAL=11.085MHz.	[10]
Q6			
CO-3; SO-1; BL-2	A	Explain ports of 8051 with its dual functionality. Why port0 require external pull up resistance when used as an input output port? Explain with suitable diagram.	[10]
CO-4; SO-1; BL-2	B	Discuss the features, advantages and disadvantages of any two microcontrollers used in industry other than 8051.	[10]
Q7			
CO-3; SO-1; BL-3	A	Four input switches are connected to pins P2.1, P2.2, P2.3, P2.4 respectively and Two LEDs are connected to pins P1.1 and P1.2 respectively of 8051. Write 8051 assembly language program with comment to perform bitwise AND and OR operation of input given by switches and reflect output on LED. [Assume different switches and LEDs for both operations]	[08]
CO-3; SO-1; BL-2	B	Draw and explain PSW register of 8051 microcontrollers.	[06]
CO-2; SO-1; BL-1	C	Define Interrupt Request Register, In-Service Register and Interrupt Mask Register of 8259.	[06]