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 (10.00 am to 1.00 pm)

Date: 18 / 04 / 2024 No. of Pages: 02

Marks: 100

Final Examination/Re-Examination (2022-23/2021-22)

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.	Illustrate the role IC8284 in 8086 microprocessor based system.	[04]
CO- 2; SO-1; BL-3	b.	Calculate the location of CS:IP values in Interrupt vector table if a type 43 interrupt is identified?	[04]
CO-2; SO-1; BL-2	c.	Explain the following pins with reference to 8087 co-processor. i. BUSY ii. $\overline{RQ}/\overline{GT0}$ iii. INT iv. QS0-QS1	[04]
CO- 3; SO-1; BL-1	d.	Define any two addressing modes of 8051 microcontroller with appropriate examples	[04]
CO- 4; SO-1; BL-2	e.	What are the advantages and disadvantages of using Arduino?	[04]
Q2			
CO-1; SO-1; BL-1	A	Describe register organization of 8086 with functions of each register.	[10]
CO-2; SO-1; BL-2	B	Draw architecture of 8087 coprocessor with detail description of numeric extension unit.	[10]

Q3			
CO-1; SO-1; BL-4	A	What is IC8288? Describe the need of IC8288 in designing 8086 microprocessor-based systems with connection diagram.	[10]
CO-2; SO-1; BL-2	B	Enumerate the sequence of actions taken by 8259 to process an incoming interrupt? Describe INTR and NMI pins of 8086 with its difference.	[10]
Q4			
CO-2; SO-4; BL-3	A	Write a neatly commented 8086 Assembly language program to find a smallest number from list of 12 numbers (A0h, 3Eh, 67H, BAh, CFh, 10h, CAh, 2Fh, 9Eh, 11h, 23h, 89h) stored in memory (data segment). Save the smallest number in a memory.	[10]
CO-3; SO-1; BL-1	B	Describe the salient features of 8051 microcontroller with a neat block diagram.	[10]
Q5			
CO-2; SO-1; BL-2	A	Explain the following with reference to 8086 assembly language [5 marks each]. i. String manipulation instructions ii. Procedure and Macro	[10]
CO-3; SO-4; BL-3	B	10 bytes of data are stored at internal memory location 35h onwards. Write an 8051 assembly language program with comments to add these bytes and save the result in R3(lower byte) and R4(higher byte).	[10]
Q6			
CO-3; SO-1; BL-2	A	Explain different modes of operation of timers in 8051? Identify the registers involved in operation of the timers and give its format.	[10]
CO-4; SO-1; BL-2	B	Discuss the features and architecture of any one microcontroller used in Arduino board with the help of block diagram.	[10]
Q7			
CO-3; SO-4; BL-3	A	Write 8051 assembly language programs with comment for following logical operations. Assume operands are available in internal memory location 40h onwards. Store the result in registers of bank0 i. AND ii. OR iii. XOR	[08]
CO-3; SO-1; BL-2	B	Draw and explain interrupt enable register of 8051.	[06]
CO-2; SO-1; BL-2	C	List the sources of Interrupts in 8086 and their type numbers. Explain any two.	[06]