SVKM'S NMIMS

MUKESH PATEL SCHOOL OF TECHNOLOGY MANAGEMENT& ENGINEERING

Academic Year: 2022-2023

Program/s: MBA Tech / B Tech

Year: II Semester: IV

Stream/s : Computer Engineering (CE)

Subject: Microprocessor & Microcontroller

Time: 3 hrs (10 am to 1 pm.)

Date: 21/04/2023

No. of Pages: 2

Marks: 100

Final Examination / 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-1,2	a.	Write features of 8087 and data types supported by 8087	[5]
CO-2 , SO-1 , BL-3	b.	Explain the interrupt response of 8086	[5]
CO-3 ; SO- 4; BL-1,2	c.	Explain any five logical instructions of 8051Assembly language programming with examples.	[5]
CO- 3; SO-4 ; BL- 2	d.	Differentiate functionality and architecture of microprocessor and microcontroller	[5]
Q2 CO-1; SO-1; BL-3	a.	Explain how 8087 will get its operand from memory	[10]
CO-1; SO-1; BL-1	b.	Draw Architecture of 8086 and explain Execution Unit in detail.	[10]
Q3 CO-4; SO-4; BL-3	a.	Write neatly commented 8051 Assembly language programs for following arithmetical operations. Assume operands are available in internal memory location 30h onwards. Store the result in registers. 1.Addition 2. Subtraction 3. Multiplication 4. Division	[10]
CO-4; SO-4; BL-2	b.	8051 microcontroller provides a full duplex serial port. Enumerate the various modes of serial port operation and give the steps of the process of serial communication.	[10]

Q4 CO-1; SO-1; BL-1,2	a.	What are the sources of interrupts to 8086? Discuss each source in detail with their priority.	[10]

CO-2; SO-4;
BL-3
	b.	Consider the following data existing in the data segment. Write a neatly commented 8086 ALP to copy the string at location **src_string** to location **dst_string**.
		
		`.data`
		`src_string db "palindrome"`
		`dst_string db 40 dup(0)`
			[10]

Q5 CO-1; SO-1; BL-1,3	a.	Describe the process of 20-bit Physical address generation in 8086 microprocessor with a diagram. What would be the physical address of the base reg. : offset reg. pair if their value is 3400h : A000h. List all the valid base reg. : offset reg. pairs	[10]
CO-2; SO-1; BL-1,3	b.	Write a neatly commented 8086 ALP to calculate average of 5 numbers (A0h, 3Eh, 67h, BAh, CFh) stored in memory. Save the average in memory. Take care of any carry generated during addition.	[10]
Q6 CO-3; SO-4; BL-2	a.	In the internal RAM of 8051, some area is dedicated to registers. Explain the dynamics of this area with the help of PSW. Explain the use of DPTR and TMOD Special function registers.	[10]
CO-3; SO-4; BL-1,3	b.	Assume XTAL= 12 MHz, write a neatly commented 8051 ALP to generate square wave of 4 KHz frequency with 50% duty cycle on Pin P1.0 using timer1 in mode 1.	[10]
Q7		Write short notes on any two	
CO-4; SO-4; BL-1,2	a.	Feature comparison of 8051, AVR and PIC	[10]
CO-2; SO-1; BL-1	b.	Flag register of 8086 and purpose of each flag	[10]
CO-1; SO-1; BL-1,2	c.	Purpose of ICWs, OCWs in 8259 Programmable Interrupt Controller and list of operating modes of 8259	[10]