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 (10:00 am to 1:00 pm)

Date: 28/June/2023

No. of Pages: 2

Marks: 100

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

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.	Distinguish between minimum mode and maximum mode of 8086	[5]
CO-2 ; SO-1; BL-1,2	b.	List any 5 addressing modes of 8086 with examples	[5]
CO-3 ; SO-4; BL-1	c.	Draw the internal RAM structure of 8051. Which feature of this internal RAM is best suited for control applications?	[5]
CO-3; SO-4 ; BL-2	d.	Explain the operation of following: I. XCH A, R1 II. RL A III. AGAIN: DJNZ R2, AGAIN IV. ANL C, P1.2	[5]
Q2 CO-3; SO-4; BL-1	a.	Explain the internal architecture of 8051 microcontroller with the help of its block diagram and list a few applications of 8051	[10]
CO-3; SO-4; BL-2	b.	Define addressing mode. Describe addressing modes of 8051 with examples.	[10]

Q3 CO-2; SO-1; BL-3	a.	The 8086 general purpose registers AX, BX, CX, DX have a special function too. What are these special functions? Give examples of instructions that demonstrate the usage of the special function of each register.	[10]
CO-1; SO-1; BL-1	b.	Draw and explain the interrupt vector table for 8086	[10]
Q4 CO-1; SO-1; BL-1,2	a.	Explain interfacing of 8087 co-processor with 8086 Microprocessor with the help of an interfacing diagram.	[10]
CO-1; SO-1; BL-1,2	b.	Illustrate and explain segmented memory model of 8086. Discuss the advantages of memory segmentation.	[10]
Q5 CO-2; SO-4; BL-3	a.	2 16-bit operands, 2345h and 67A3h, are available at memory locations **operand1** and **operand2** in the data segment. Write an 8086 ALP to read these two operands and multiply them. Save the result at memory locations **res_high** and **res_low**, also reserved in the data segment.	[10]
CO-1; SO-2; BL-4	b.	Describe minimum mode memory read operation with the help of timing diagram	[10]
Q6 CO-3; SO-4; BL-3	a.	Given Crystal oscillator frequency of 11.0592 MHz, write a **neatly commented** 8051 assembly language program to transmit a byte of data stored at location 60H at 4800 baud. Choose appropriate mode of Timer1.	[10]
CO-3; SO-4; BL-1,2	b.	8051 has internal timer/counters. Draw and explain its control logic. Elaborate on the use of Timer SFRs.	[10]
Q7		Attempt any two questions:	
CO-1; SO-1; BL-1	a.	Describe with neat sketch the architecture of 8259 programmable interrupt controller (PIC)	[10]
CO-4; SO-4; BL-1,2	b.	Define an embedded system. List features of Arduino board that make it a popular choice for embedded applications.	[10]
CO-1; SO-1; BL-3	c.	Justify the need of having a math coprocessor 8087 in an 8086 based system. Draw the internal block diagram of 8087.	[10]