Reg.No.:												

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 50015

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2024
Fifth Semester
Computer Science and Engineering
U19CS521 – MICROPROCESSOR AND INTERFACING
(Regulation 2019)

Time: Three Hours Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Define the term 'microprocessor' and tell the main function of the 8085 microprocessor.	2	K1	CO1
2.	Give the role of the accumulator in the 8085 microprocessor.	2	K1	CO1
3.	Recall 'instruction cycle,' and give its relation with machine cycles in the 8085?	2	K1	CO2
4.	Write a simple assembly language program in 8085 to add two numbers stored in memory locations 2000H and 2001H.	2	K1	CO2
5.	Differentiate the Maximum Mode and Minimum Mode of the 8086 microprocessor.	2	K2	CO3
6.	Calculate the physical address in 8086 for the given segment address 2000H and offset 1F3AH.	2	K2	CO3
7.	What is the function of the 'PUSH' and 'POP' instructions in 8086?	2	K2	CO4
8.	Write a 8086 assembly language program to multiply two numbers.	2	K2	CO4
9.	Show the role of the 8255 programmable peripheral Interface in a microprocessor system?	2	K2	CO5
10.	Calculate the clock frequency required for a programmable interval timer 8254 to generate a delay of 500 ms, given a count value of 5000.	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.		Questions	Marks	KL	CO
11.	a)	Describe the process of memory read operation in 8085 microprocessor with the help of timing diagram.	13	K3	CO1
		(OR)			
	b)	Analyze the impact of a faulty clock signal on the operation of 8085 microprocessor. How would this affect the execution of instructions?	13	K3	CO1
12.	a)	Write an 8085 assembly language program to find the largest number in an array of 10 elements stored in memory.	13	K3	CO2
		(OR)			
	b)	Summarize the different addressing modes of the 8085 microprocessor. How does the choice of addressing mode influence the execution speed of a program?	13	K2	CO2
13.	a)	Develop a system using the 8086 microprocessor in Minimum Mode, and explain how the control signals are generated.	13	K3	CO3
		(OR)			
	b)	Analyze the differences between the segment register model in 8086 and the flat memory model. How do these models affect memory management and program execution?	13	K3	CO3
14.	a)	Identify a 8086 assembly language program to implement a basic calculator that can perform addition, subtraction, multiplication, and division on two user-input numbers.	13	K3	CO4
		(OR)			
	b)	Experiment the use of stack operations in subroutine management in 8086 programming. How does stack manipulation improve program structure and modularity?	13	K3	CO4
15.	a)	Outline the working of the 8255 Programmable Peripheral Interface (PPI) and how it can be used to interface with different peripheral devices.	13	K2	CO5
		(OR)			
	b)	Explain the importance of peripheral interfacing in microprocessor systems. How do devices like 8255, 8254, 8279, and 8251 enhance the functionality of the 8086 microprocessor?	13	K2	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	A company is designing a real-time industrial monitoring system using 8086 microprocessor. The system needs to interface with various sensors, a digital display, and a communication module for transmitting data to a remote server. The sensors are connected through 8255 Programmable Peripheral Interface, the digital display is managed by the 8279 Keyboard Display Controller, and the communication module uses the 8251 Programmable Communication Interface. Design the interfacing scheme for this system, detailing how each peripheral is connected to the 8086 microprocessor. Also, Explain the initialization process for each of the interfaces and how data will be transferred between the peripherals and the microprocessor.	15	K5	CO5
		(OR)			
	b)	A robotics company is developing a small robot controlled by the 8085 microprocessor. The robot needs to navigate through a grid by following a series of instructions provided in an array. The instructions include movements such as "move forward," "turn left," and "turn right." The robot must execute the instructions and keep track of its current position on the grid. Write an 8085 assembly language program to read the instructions from an array and control the robot's movements on the grid. Also, Analyze how you would use different addressing modes to efficiently access the instructions and update the robot's position.	15	K5	CO5