

Reg. No.:

Name :



VIT

Vellore Institute of Technology

## Continuous Assessment Test I – January 2025

Programme	: B.Tech. (ECE) and B.Tech. (ECM)	Semester	: Winter 2024-25
Course	: Microprocessors and Microcontrollers	Code	: BECE204L
Faculty	: Dr. V. Berlin Hency	Class Nbr	: CH2024250500696
Time	: 90 Minutes	Slot	: B2+TB2
		Max. Marks	: 50

Answer ALL the questions

Q.No.	Sub. Sec.	Questions	Marks	BT Level
1.		Differentiate between a Microprocessor and a Microcontroller with respect to the following aspects: memory, resources, speed, architecture, and applications.	5	2
2.	(a)	With respect to 8086, explain the following signals. (i) $\overline{MN}/\overline{MX}$ (ii) $\overline{INTR}$ (iii) $\overline{DT}/\overline{R}$ (iv) $\overline{TEST}$ (v) $\overline{BHE}$	5	2
	(b)	Calculate the 20-bit physical address for each instruction VALUES = 3000H, CS = 0000H, DS = 2000H, SS = 3000H, ES = 6000H, IP = 8000H, SI = 4C00H, DI = 5D00H, SP = 5000H, BP = 2468H, AX = 2000H, BX = 3000H. (i) MOV AX, [246BH] (ii) MOV AX, [BX] [SI] (iii) MOV AX, 1234 [BX][DI]	5	
3.		An 8086 microprocessor is interfaced with an 8255 Programmable Peripheral Interface to control an LED and monitor two switches. The LED is connected to bit 2 of Port B, and the two switches are connected to bits 6 and 7 of Port A. The LED should turn ON when both switches are in the same state (either both HIGH or both LOW), and should remain OFF otherwise. Assume the address of the Port A is 0860H. Write an 8086 assembly language program to implement this logic, and draw a neat interfacing diagram showing the connections between the 8086, 8255, LED, and switches.	10	4
4.	(a)	Draw and explain the architecture of 8254.	6	2
	(b)	Explain the memory segmentation of 8086 and respective registers for finding the 20-bit physical address.	4	
5.	(a)	Write an 8086 assembly language program to generate the Fibonacci sequence. The length of the sequence is stored in the data segment, with the length specified as 10. Store the generated sequence in memory location starting from 4000H	10	4
	(b)	Write an 8086 assembly language program to find the square root of perfect square number. Assume the input number is stored in the memory location 5000H, and the corresponding square root should be stored at 5001H.	5	