Reg. No. : | | | | | | | | | | | | |

Question Paper Code: R4I02

B.E./B.Tech. DEGREE EXAMINATION, NOV 2025

Fourth Semester

CSE (Internet of things)

R21UIO402 - MICROPROCESSOR AND EMBEDDED SYSTEMS

(Regulations R2021)

Duration: Three hours | Maximum: 100 Marks

Answer ALL Questions

PART - A (10 x 2 = 20 Marks)

1.	What is assembly level programming?	CO1- U
2.	Calculate the physical address for fetching the next instruction to be executed, in 8086?	CO2-App
3.	What is USART?	CO1- U
4.	Write the program mode 0 operation of 8255?	CO2-App
5.	What is PSW?	CO1- U
6.	What are the special function register?	CO1- U
7.	What is serial Data buffer?	CO1- U
8.	How would you configure the 8051 to access external RAM, and when is the external memory access generated during program execution?	CO2-App
9.	List out the components of embedded systems.	CO1- U
10.	Write a program to transfer the data from port P0 to port P1.	CO2-App

PART – B (5 x 16= 80 Marks)

11.	(a)	Explain in detail about the interrupts and interrupt service routines of 8086.	CO1- U	(16)
		Or		
	(b)	Explain the internal hardware architecture of 8086 microprocessor with neat diagram.	CO1- U	(16)
12.	(a)	In a practical application, where would you typically use an R-2R ladder D/A converter, and what are the design considerations?	CO2- App	(16)

Or

	(b)	How would you configure Port A in Mode 1 for input operation using handshaking signals? Provide a sequence of operations.	CO2- App	(16)
13.	(a)	Draw the internal architecture of 8051 Microcontroller.	CO1- U	(16)
		Or		
	(b)	Explain the arithmetic and control instructions of 8051microcontroller.	CO1- U	(16)
14.	(a)	How would you interface a unipolar stepper motor with an 8051 microcontroller? Explain the process step-by-step, including full and Half excitation sequence in controlling the stepper motor.	CO2- App	(16)
		Or		
	(b)	Assuming a 12 MHz clock, how would you calculate and load the values into TH0 and TL0? Explain how the auto-reload feature works and the role of the TMOD and TCON registers in this configuration.	CO2- App	(16)
15.	(a)	Write embedded c program for interfacing stepper motor with PIC Microcontroller.	CO2- App	(16)
		Or		
	(b)	Write an 8051 C program to send hex values for ASCII characters of 0, 1, 2, 3, 4, 5, A, B, C, and D to port P1.	CO2- App	(16)