Total number of printed pages:2 **UG/7th/UIE713**

2022

EMBEDDED SYSTEMS

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1.	a)	Draw the architecture of 8051 microcontroller and describe the functions of each block.	10
	b)	Write an assembly language program to convert a hexadecimal data to ASCII format in 8051 microcontroller.	6
	c)	Discuss the flags in 8051 microcontroller.	4
2.	a)	What are the functions of ports in 8051 microcontroller? Discuss the operational features of each ports.	8
	b)	Write an assembly language program to toggle bits of port P1 of 8051 microcontroller with a delay.	6
	c)	Discuss about the addressing range of RAM and ROM in 8051 microcontroller.	6
3.	a)	Define the following instructions : CJNE, DJNZ, MUL, ACALL, CPL, ANL, ORL, JNB, ORG, DB	10
	b)	What are the addressing modes of 8051 microcontroller? Give examples in each case.	10
4.	a)	Write a C program to accept data from port P0 of 8051 microcontroller and send the same to port P2 of the microcontroller.	7
	b)	The port P1.1 of 8051 microcontroller is connected to a proximity sensor and port P2.1 is connected to a buzzer. If the sensor detects an object and sends a signal to the microcontroller, the buzzer should turn on immediately for some time. Write the C language program for the given application using 8051 microcontroller.	10
	c)	Draw the hardware (or operational circuit) diagram of 8051	3

		microcontroller.	
5.	a)	Discuss the operational features of 8051 timers.	6
	b)	Specify the bits of TMOD register.	6
	c)	Write a program to generate a waveform of 50Hz using the timers of 8051 microcontroller. Consider the crystal frequency as 11.05MHz.	8
6.	a)	How serial communication is executed in 8051 microcontroller? Discuss the hardware requirements.	6
	b)	Describe the operation of SBUF and TCON registers.	6
	c)	Write a program to send a letter “A” to PC using 8051 Microcontroller.	8
7.		Write short notes on any two of the following:	10x2=20
	a)	LCD interfacing with 8051	
	b)	ADC interfacing with 8051	
	c)	Sensor interfacing with 8051	
	d)	Architecture of PIC Microcontroller.	