Name: **Enrolment No:**	

UPES

End Semester Examination, December 2023

Course: Microprocessor and Embedded systems **Semester: V**

Program: B.Tech Computer Science **Time : 03 hrs**

Course Code: ECEG3052 **Max. Marks: 100**

Instructions:

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Implement the full-adder circuit with a decoder or multiplexer.	**5**	**CO1**
Q 2	State the function of given 8085 instructions: JP, JPE, JPO, JNZ, STAX	**5**	**CO2**
Q 3	Implement logic functions $F_1(A,B,C,D)=\Sigma m\ (0, 2, 7, 9, 11, 13)$ using multiplexer or decoder	**5**	**CO1**
Q 4	Explain the operation of JK Flip-Flop with Truth table.	**5**	**CO2**
Q 5	Write a program in 8085 microprocessor to access data 32H and 45H from 2501H and 2502H, add them and store the result in memory location 2503H.	**5**	**CO4**
	SECTION B **(4Qx10M= 40 Marks)**		
Q 6	Draw the pin diagram of 8051 and describe the operation of all the pins of 8051 microcontroller.	**10**	**CO2**
Q 7	What are the different addressing modes of 8051 microcontroller? Illustrate with example.	**10**	**CO2**
Q 8	What is RISC and CISC architecture? With a neat diagram, explain the difference between RISC and CISC architecture used in embedded systems hardware design.	**10**	**CO5**

Q 9	Explain different characteristics of embedded systems.
	OR
	Specify the content of registers, flags, output at port1, and calculate the total number of T states required if the following program of 8085 microprocessor is executed.
	MVI B, 82H
	MOV A,B
	MOV C,A
	MVI D, 37H
	OUT PORT1
		10	**CO4/CO 5**

	HLT		
SECTION-C (2Qx20M=40 Marks)			
Q 10	a) Ten hex numbers are stored in RAM location 50H onwards. Write a program in 8051 microcontroller to find the biggest number in the set. The biggest number should finally be saved in 60H. b) In a semester , a student has to take six courses. The marks of the student out of 25 are stored in RAM location 47H onwards. Find the average marks and output it to port1.	**10** **10**	**CO3/CO 4**
Q 11	a) Design an interfacing scheme for interfacing Analog to digital converter with Microprocessor/ Microcontroller b) Draw the timing diagram of the following instruction: 2000 MOV A,B OR a) Assume that P1 is an input port connected to a temperature sensor. Write a program to read the temperature and test it for the value 75. According to the test results, place the temperature value into the registers indicated by the following. IF T = 75 then A = 75 IF T < 75 then R1 = T IF T > 75 then R2 = T b) How will you execute multiple interrupt using priority encoder? Develop a circuit to implement the instruction RST 5 using 8085 interrupt.	**10+10** **10+10**	**CO4/CO 5**