Total number of printed pages: 02 **UG/4th Semester/UECE403**

2023

Microcontroller

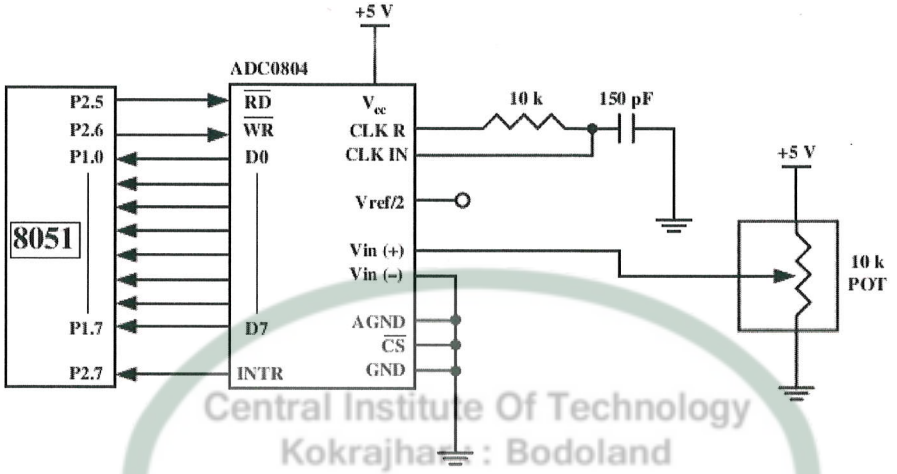
Full Marks : 100

Time : Three hours

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

*Answer **any five** questions.*

1.	a)	Write a program to transfer character `Y' serially at 9600baud continuously through serial port and also send a letter `N' through port0 which is connected to a display device. [Assembly and C]	[5+5]
	b)	Give a detailed comparison between the Polling and Interrupt.	6
	c)	Explain the mode0 of serial communication in 8051 in brief.	4
2.	a)	Write an assembly program to create square wave with 50% duty cycle at bit port P1.3 with Timer0, mode1, Initial count is FF02h.	6
	b)	Write a C program to toggle the P2 infinitely.	4
	c)	Write the description of various data addressing modes available in 8051 with 2 examples each.	10
3.	a)	MOV SP, #50H PUSH 20H PUSH 30H. Find the current value of the stack pointer after the execution.	2
	b)	An LUT is shown below. Write an assembly program to save the contents of the LUT to the RAM starting from address 20H. **MY_TABLE:** **Address** / **Data** 0250H / 1FH 0251H / 20 0252H / F5H 0253H / 'D'	8
	c)	Write a program (C & Assembly) to display a message "HELLO INDIA"	[5+5]

		at port 1 one character at a time, continuously with some delay in between each display.	
4.	a)	 Write a C program to interface the 8-bit ADC as shown in above diagram.	10
	b)	Describe the UART communication, various mode available in 8051 and write the steps for receiving serial bits serially	[4+2+4]
5.	a)	Mention the types of interrupts available in 8051, along with their vector addresses. Write an assembly program to display character 'Y' at P0 and also generate a square wave at P2.0 with the help of timer based interrupt.	[4+6]
	b)	i) MOV A, #25H RR A RR A RR A RR A Find the value of A after each step.	[4]
		ii) Write instructions to increment contents of R5 until it becomes equal to contents of address 30H.	[6]
6.	a)	Mention the steps of interrupt execution in 8051 microcontroller.	6
	b)	Write a short note on Program Status Word	6
	c)	Write an 8051 C program to get a byte of data from P0. If it is less than 100, send it to P1; otherwise, send it to P2.	8