Indian Institute of Information Technology Kota
Department of Electronics and Communication Engineering
ECT206- Microcontrollers and Interfacing
II Year IV Semester Mid Term Examination-2024

Time: 90 Minutes **Date: 20/03/2024** **Max. Marks: 30**

Q. 1 Describe the architecture of 8051 with the help of a neat diagram. Also, describe the RAM structure of 8051 Microcontroller.

OR

Draw the neat and clean pin diagram of 8051 microcontroller and label each pin. Also, write short notes on the following:

a) Addressing modes b) Interrupts **[3+3]**

Q.2 Differentiate between Microprocessor and Microcontrollers. Also, Differentiate between following instructions used in 8051 Assembly Language Programming:

(i) MOV A,@R0 & MOV A, R0 (ii) LJMP & SJMP

(iii) MOV A,23H & MOV A,#23H (iv) ACALL & LCALL **[2+4]**

Q.3 (i) WAP to generate a square wave on port pin P1.6 having the duty cycle of 66.66%.

(ii) WAP to convert incoming serial data into parallel data.

(ii) Assume that bit P2.2 is used to control an Outdoor Light whereas the bit P2.5 is used to control Indoor Light. Write a Program to show that if the Outdoor Light is turned on the Indoor Light must be turned off. **[2+2+2]**

Q.4 (i) classify the following instructions according to their addressing modes. Also, explain the functions of these instructions.

a) INC 50H b) ANL A,#30H

b) MOV @R1,A d) CPL A

e) MOV 60H,70H

(ii) In a Semester, a student has to take five courses. The marks of the student are stored in RAM Locations 40H onwards. Find the average Marks and display it on Port 1. **[2.5+3.5]**

Q.5 (i) Assume that 5 BCD data items are stored in RAM locations starting at 50H. Write a program to find the sum of all numbers. The result must be in BCD only.

(ii) Write a Program to add two 32 bit numbers stored in RAM Locations as shown below:

First number:

Address	Data
50H	A0H
51H	3BH
52H	39H
53H	01H

Second number:

Address	Data
60H	FDH
61H	05H
62H	C7H
63H	56H

Result:

Address	Data
40H	
41H	
42H	
43H	

(iii) Write a program to convert hexadecimal number to a binary number. **[2+2+2]**