VIT

Reg. No. : 21BCE5547

Final Assessment Test (FAT) - APRIL/MAY 2023

Programme	B.Tech	Semester	Winter Semester 2022-23
Course Title	MICROPROCESSORS AND MICROCONTROLLERS	Course Code	BECE204L
Faculty Name	Prof. Sumathi V	Slot	G1+TG1
		Class Nbr	CH2022235002453
Time	3 Hours	Max. Marks	100

PART-A (5 X 5 Marks)

Answer All questions

01. As compared to 16 bit microprocessor, 8 bit microprocessor are limited by following functionalities [5]

    a. Speed of execution of instructions
    b. Addressing memory
    c. Data handling capabilities

    Justify each of your chosen options with explanations.

02. Identify the errors in the following 8086 instructions and rewrite in the correct form: [5]

    a. MOV AX, DL
    b. ADD 2031H, AX
    c. XOR DS, 1000H
    d. SUB [2500H], [1235H]
    e. SHR 02H

03. Mention the significance of the following 8086 instructions instructions/directives [5]

    a. CLD
    b. DAA
    c. IRET
    d. TEST
    e. OFFSET

04. Examine the internal memory organization of 8051 Microcontroller and show how it is segmented? [5]

05. Assess and identify the address mode of the following instructions. Explain its operation. [5]

    (i). MOV A, @ A+ PC
    (ii). DAA
    (iii). MOV 03H, 04H
    (iv). INC DPTR
    (v). SJMP Label

PART-B (6 X 10 Marks)

Answer All questions

06. The marks scored by a student in a semester in seven subjects are 67, 87, 45, 78, 79, 56 and the last mark is the last two digits of your registration number. All the marks are assumed to be in hexadecimal. Write an 8086 assembly language program to average the marks and store the [10]

average mark in 3050h using indirect addressing mode. Also if the student has scored less than 40 marks in any of the subjects print the result as a fail and if scored equal to or greater than 40 print the result as a pass

Use appropriate directives wherever necessary.

07. A Switch SW is connected to port-1 pin P1.3 and LEDs are connected to all pins of Port P2 & P3. Write a program to perform the following: [10]

(i). If SW=0, make LEDs to glow serially only one at a time starting from P2.0 to P2.7 with the time delay of 0.5 seconds between each.

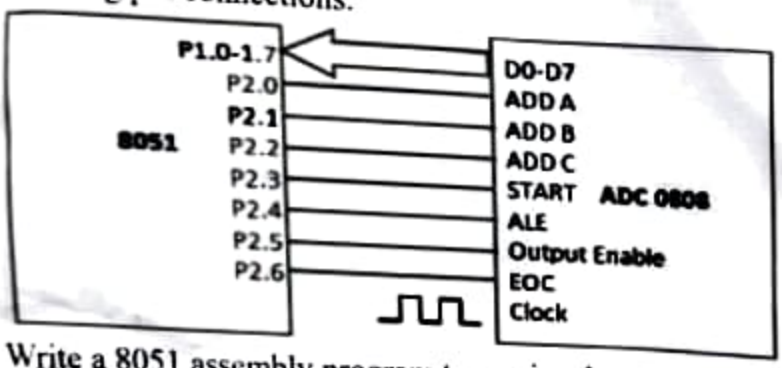
(ii). If SW=1, blink all LEDs of port P3 for every 0.5 seconds

Write a 8051 Microcontroller assembly language program for the above condition and assume the frequency is 12 MHz.

08. Write an 8051 assembly program to transfer 10 bytes of data from internal memory location 50H to external memory location 90H. [10]

09. Write a timer interrupt program that continuously get 8-bit data from P0 and sends it to P1 while simultaneously creating a square wave of 500 µs period on pin P2.1. Use timer 0 to create the square wave. Assume that XTAL = 12 MHz. [10]

10. An LM35(Temperature measuring sensor) is connected to P0 through an ADC0808 as per the following pin connections. [10]



Write a 8051 assembly program to receive the sampled data in the P1 port.

11. With a neat diagram, explain ARM core dataflow model. Describe the different types of barrel shift operations with relevant diagram [10]

PART-C (1 X 15 Marks)

Answer All questions

12. a) Use ARM assembly Instructions to write an assembly program to evaluate (A + 8B + 7C - 2D)/4, where A = 25, B = 19, C = 99 and D = 2. [15]

b) For the previous question justify how ARM based RISC architecture is efficient in computing in comparison to CISC architecture.