Reg. No.:

Name :

VIT

Vellore Institute of Technology

Continuous Assessment Test II – March 2023

Programme	:	B.Tech (ECE/ECM)	Semester	:	Winter 2022 – 23
Course Title	:	MICROPROCESSORS AND MICROCONTROLLERS	Code	:	BECE204L
			Slot	:	A2+TA2
Faculty	:	Dr. SOFANA REKA S Dr. REVATHI S Dr. SUBHASHINI N Dr. S. MUTHULAKSHMI Dr. GUGA PRIYA G Dr. PRAKASH V Dr. E MANIKANDAN Dr. RICHARDS JOE STANISLAUS Dr. V.R BALAJI	Class Nbr	:	CH2022235001113 CH2022235001114 CH2022235001115 CH2022235001116 CH2022235001117 CH2022235001118 CH2022235001119 CH2022235001120 CH2022235001121
Time	:	90 Minutes	Max. Marks	:	50

Answer ALL questions

Q.No.	Sub. Sec.	Question Description	Marks
1.		Design an 8051 microcontroller based smart car parking indicator system for a mall comprising 50 parking slots. In the mall, at the entry, the gate has one digital InfraRed (IR) sensor for monitoring the cars entering (connected to INT0 pin of 8051) and at the exit, another digital IR sensor for monitoring the cars that are exiting (connected to INT1 pin of 8051) is present. Each of these IR sensors generate an interrupt signal whenever a car makes an entry/exit, and accordingly number of free parking slots are to be calculated. Transmit the number of free parking lot value continuously, serially with 9600 baudrate with 8 bit data, 1 start bit and 1 stop bit, crystal frequency 11.0592MHz. Also place the copy on port P1. Write 8051 microcontroller assembly language program to configure the above system and perform the necessary serial data transmission.	[15]
2.		Consider an 8051 microcontroller based weighing device where the weight and height of a person are available at Port 1 and 2 of 8051 microcontroller respectively. Write an 8051 assembly language program to perfrom the following: (i). Obtain the values of the height and weight from port 1 and 2 and compute BMI=Weight / Height^2. (ii). Display the BMI value on first line of the 2x16 LCD display (Port 0 is connected with D0-D7 and P3.0,P3.1 and P3.2 are used as RS, R/W and E pins respectively). Assume the calculated BMI is 36 from (i).	[15]
3.		For a weather automation system using 8051 microcontroller with frequency 11.0592 MHz, i. Configure the necessary ports for acquiring temperature in P1 and humidity in P2. ii. Write an assembly language program using timer to monitor the temperature for first 3 seconds, monitor the humidity for next 6 seconds and send it to external memory locations 5000_H and 6000_H respectively	[10]
4.		Identify the logical and syntax errors in the given program. Write the corrected version of the program with proper comments for each instruction. Also mention the values stored in A and B register after complete execution of the program. Program Description: In a semester, a student has to take six courses. The marks of the students	[10]

are stored in RAM locations 47H onwards are: 10h, 55h,36h,12h,15h,11h Find the average marks and store it in port P1.(Assume the added result value must not exceed FF H)

```
        MOV R1, #06
        MOV R0, #47
        MOV A, #0
BACK:   ADD A, R0
        INC R0
        DJZ R1, BACK
        DIV AB
        MOV P1, B
        END
```

Total Marks [50]