Reg. No.: 23BPS1156

Name :

VIT

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

Continuous Assessment Test II – October-2024

Programme	:	B.Tech. (CSE)	Semester	:	Fall 2024-25
Course	:	BECE204L & Microprocessors and Microcontrollers	Code	:	CH2024250100394
			Class Nbr	:	G2 + TG2
Faculty	:	Dr. Sourabh Paul	Slot	:	50
Time	:	90 Minutes	Max. Marks	:	Fall 2024-25

Answer ALL the questions

Q.No.	Sub. Sec.	Questions	Marks	BT Level
1.		Consider an 8051 microcontroller system which takes numeric inputs between 1 and 26 from the user through the Port P2. The numeric value "1" is mapped to the character "A", "2" is mapped to "B" and likewise "26" is mapped to "Z". Process the received numeric input in such a way that you transfer the mapped character of it via serial communication with a baud rate of 9600. Assume the crystal frequency of the 8051 microcontroller is 25.8048 MHz. Write an 8051 assembly language program to implement the same. [Note: The ASCII code for A to Z starts from 41H (A) to 5AH (Z)]	15	6
2.		Write an 8051 assembly language program that calculates the Body Mass Index (BMI) based on user input and displays the BMI category on an LCD. The program should be triggered by pressing a switch connected to the INT0 pin. The height (in meters) and weight (in kilograms) should be stored in memory locations 40H and 41H, respectively. Use the formula: $$BMI = \frac{Weight}{(Height)^2}$$ The program should display: • "UNDERWEIGHT" if BMI < 18 • "NORMAL" if 18 ≤ BMI ≤ 25 • "OVERWEIGHT" if BMI > 25 Additionally, draw a schematic diagram with all pin connections illustrating the interface of 8051 with LCD.	20	6
3.		If SS = ABCDH, BP = 2345H, SP = 7456H, AX = 0509H and BX = BCDEH, CX = 1203H; DX = 6789H; CF = 1, CS = 6500H, DS = 9876H, SI = 1000H, IP = DEFAH, ES = 1234H. (a) Compute the 20-bit physical address of the stack top, code and data segments. **(5 Marks)** (b) If the following instructions are executed in the given sequence,	15	4

find the output of all the registers. **(4 Marks)**

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PUSH BX
PUSH AX
POP CX
ROL AX, CL
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(c) Write the contents and memory locations of SP, BP and SS after the execution of the above instructions. **(6 Marks)**

Course Faculty

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