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Vellore Institute of Technology

Continuous Assessment Test I – January 2023

Programme	: B.Tech. (CSE) & B.Tech. (CSE with Specialization)	Semester	: WS 2022-23
Course	: Microprocessors and Microcontrollers	Code	: BECE204L
		Class Nbr	: C112022255002125
Faculty	: Dr. Hariharan I	Slot	: F1 + TF1
Time	: 90 Minutes	Max. Marks	: 50

Answer ALL the questions

Q.No.	Sub. Sec.	Questions	Marks
1		If CS = 1000 H, DS = 25A0 H, SS = 3210 H, ES = 5890 H, BX = 43A9 H, BP = 3400 H, SP = 500H; SI = 0040 H, DI = 0050 H, find the physical address for the following instructions (wherever possible) and identify the type of addressing mode used in each instruction. i. ADD BL, 05H[BP][SI] ii. MOV 10H[DI], BX iii. MOV AL, [5000H] iv. MOV DX, 78A2H v. PUSH BX	10
2	a.	With respect to 8086, explain the following. (i) TEST signal and TEST instruction (ii) ALE and $\overline{BHE}$	4
	b.	With respect to 8086, explain the following with suitable examples. (i) SHR and SAR (ii) SUB and SBB	6
3		Consider Mr. X plans to celebrate his birthday by donating cookie boxes to several homes where parentless children are homed. He orders for assorted cookies from the city baker and packs it on his own. The baker prepares 1350 cookies. Write an 8086 assembly language program to find how many boxes would be required if Mr. X packs the cookies, for the following three conditions: (i) 10 cookies per box, (ii) 20 cookies per box, and (iii) 25 cookies per box. Also, find the number of unpacked cookies in each condition. The number of boxes required in each condition has to be stored in an array starting at an offset address of 2000H. The number of unpacked cookies in each condition has to be stored in an array starting at an offset address of 3000H.	10
4		Write an assembly language program to interface 8086 with 8255 in Mode 0 operation. Following task has to be performed by the program. Two switches "X" and "Y" are connected to the port pins PC7 and PC3 of Port C, respectively. Port B should output numbers in a specific fashion as given in Table 1, decided by the switches connected to the PORT C. Assume that the other pins of Port C are connected to GND (ie logic '0'). Draw a neat interfacing diagram.	10

Table 1

Condition of Switches	Output at Port B
X = OFF; Y = OFF	00 H
X = OFF; Y = ON	01 H
X = ON; Y = OFF	10 H
X = ON; Y = ON	11 H

5 (i) Draw and explain the architecture of 8254 timer. 6

(ii) Mention the salient features of 16-bit microprocessor. 4

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