National University of Computer and Emerging Sciences, Lahore Campus



Exam:

Program:

BSCS,BSDS,BSR 1 Hour

Course Code: Semester:

EE2003 Fall 2023

30

3

Duration: Paper Date: Section:

28-Sept-2023

Total Marks: Page(s):

Roll No.

Solution

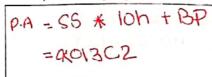
Instruction/Notes:

Midterm - I This is an open notes/book exam. Sharing notes and calculators is NOT ALLOWED. All the answers should be write the answers should be write. the answers should be written in provided space on this paper. Rough sheets can be used but will not be collected and checked. In case of any ambiguity, make reasonable

assumptions. Questions during exams are not allowed. Question 1 [CLO 1, 2] [15 Marks]: Answer following short questions:

i. [1 Mark] How many number of address lines (no. of bits) are required to access 2GB memory? ______

ii. [2 Marks] SS = 0x012D, DS = 0x3F22 and BP = 0x00F2. Calculate the physical memory address of the destination operand for following statement: Mov word [bp] . 7 Show your working to get credit.



012100 + 00 F2 013C2

iii. [3 Marks] What will be the values of AX and BX registers in hex after the execution of the following piece of code?

	D Marks Willer will be the
	[ORG 0x0100]
	jmp start
	num1: dd 0x7E945FA2
	num2: dd 0xB2654104
i	
	start:
	mov ax, [num1+2]
	mov bx, [num2+1]

AX = 0x7E94

BX = 0x6541

iv. [3 Marks] Identify whether the following combinations for addressing are valid or not. Each part is independent of others.

	Valid/Invalid		
Mov ax , [bx - si]	Involid		
Mov ax, [bx+ di + 0x0300]	Volid		
Mov al, [bx + si]	Valid		
Mov ah, [bh]	Involid		
Mov ax, [bh + bl]	Invalid		
Mov ax. [0x0200]	Valid		

v. [3 Marks] Write assembly language code that calculates 2's complement of a number in the AX register. Your code should not exceed 2 instructions. No credit will be given if code exceeds 2 instructions.

> not ax add ax,

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- Lather	the following /	
vi. [3 Marks] Identify whether	Taken	Show your working below
your working to get credit.	Taken/Not Taken	=7 in 1/ Viles is OXFFFF
Mov ax, -1 Mov bx, 0xFFFF Cmp ax,bx Je l1	Taken	-1 in 16-bits is OXFFFF
Mov ax,0x1924 Mov cx, 0x0123 Sub cx,ax JO l1	Not Taken	177617 -1924 E7FF Subtracting larger number from Smaller number gives negative answer so no overflow.
Mov ax, FFFFh Mov bx, FFFFh Add ax, bx L1: Mov ax, 0 Mov bx, 0 Jnc L1	Not Taken	TFFF IFFF OFF IFFF Corry generated more instructions aloes not offect flags so carry Flag remains I so no jump taken.

Question 2 [CLO 3] [15 Marks]: Parity of a number is odd if the total number of 1s in its binary is odd. Following examples show different numbers, their binary and parity.

Number	0xA7	ОхАЗ	0x94	0xFF	0x00
Binary	1010 0111	1010 0011	1001 0100	1111 1111	0000 0000
Total No of 1s	5	4	3	8	0
Parity	Odd	Even	Odd	Even	Even

Write a program that removes odd parity numbers from an array and keeps even parity numbers in start. A sample array before and after execution of required program is shown below:

	0xA7, 0xA3, 0x94, 0xFF, 0x00	No.
Array After Execution:	0xA3, 0xFF, 0x00, 0x00, 0x00 ;odd parity numbers have semoved	_
	party numbers have removed	_

