National University of Computer and Emerging Sciences, Lahore Campus

Course Name:	Computer Organization and Assembly Language	Course Code:	EE213
Program:	BS(Computer Science)	Semester:	Fall 2018
Duration:	60 Minutes	Total Marks:	35
Paper Date:	15th Nov, 2018	Weight	15%
Section:	ALL	Page(s):	4
Exam Type:	Mid-2		

Student : Name:_____ Roll No._____ Section:_____

Instruction/Notes:

1. Exam is Open book, Open notes.
2. Properly comment your code.
3. Syntax error will result in **negative** marking.
4. Write your answer in the space provided. You **can take extra sheets BUT they WONT BE ATTACHED WITH THE QUESTION PAPER OR MARKED.**

Q1. Write a function, to clear the screen, whose only parameter is always zero and which is already placed on stack before any call. The function is hooked at interrupt 80h and may also be called directly as a subroutine or as an interrupt. The function should detect how it is called and returns appropriately. **[10 Marks]**

Q2. Given the following initial values before the execution of code, fill in the blanks below: **[5 Marks]**

Initial Values **AX=BX=CX=DX=SI=DI = 0000** **str1 is at: 0x0112**

CS=DS=ES=SS=0x19F5

```
[org 0x0100]

std
mov si, str1
push cs
pop es
mov al, 'o'     ;ascii of ‘o’ is 0x6F
mov cx, 23
repne scasb

mov ax, 0x4c00
int 21h
str1: db 'The exam is of one hour',0
```

ZF_____ SI_____ AX_____

CX_____ DI_____

Q3. Write a software interrupt service for int 0x50 that receives three arguments via registers: a number k in ax register, a segment value in dx register, and an offset value in bx register. The isr locates the string placed at dx:bx and reduces its length by ‘k’ if its length is greater than ‘k’ and returns the new length in ax register, else returns the original length. For this question, you can assume the string is null terminated. **Do this question using string instructions. Write complete code. [5 Marks]**

Q4. The video display memory is divided into 25 rows and 80 columns. Assume that for the purpose of this question, rows are numbered from 0 to 24 and columns are numbered from 0 to 79. Assuming there are no errors in the code and the screen is cleared prior to execution of this code, write the output of the following code in the right column. With each output line, also write the row and the column number. For example if the output 'A' is generated at row 10 and column 20, then write as follows: **[1x15 Marks]**

Row=10, Column=20, Output=A

```
[org 0x0100]
        mov ax, 0xb800
        mov es, ax
        mov bl, 2
        mov di,0
        mov dx, 0x0730
        mov cx, 9
print:  mov ax, cx
        add dx, ax
        div bl
        cmp ah, 0
        je skip
        mov ah, 0
        add di, 320
        mov word[es:di], dx
skip:   mov dx, 0x0730
        dec cx
        jnz print
        mov ax, 0x4c00
        int 0x21
```

Row_____ Column _____ Output_____

Row_____ Column _____ Output_____

Row_____ Column _____ Output_____

Row_____ Column _____ Output_____

Row_____ Column _____ Output_____

Best of Luck ☺