MILITARY COLLEGE OF SIGNALS - NUST

CE-420 COMPUTER ORGANIZATION & ARCHITECTURE LAB

FINAL EXAM (BESE15-A)

Instructor: Nausheen   **Total:** 30 Marks   **Time Allowed:** 3 Hrs

Instructions:
1. Students are allowed to get help from lab handouts only.
2. Students are also allowed to have codes developed by them during previous labs.
3. Use comments and proper naming scheme in program. Do save your program by question number.
4. Copied code will be given zero mark.
5. No discussion among students is allowed during lab exam.
6. Each student must create a folder by his/her name, place solution of all questions inside that folder including sample outputs (as an image or word file) as per requirement. At the end of lab exam, submit this folder on **LMS** after compressing it.

Question No.1: Use MS DOS Debugger. Submit the answer in a word file containing snapshots of your code and its output. **(10)**

a) Use Enter command to initialize the byte at location 200 and 201 with values 10h and 12h. Move the byte at location 200 to DL register and the one present at location 201 to BL register. Take XOR of both DL and BL register and save result to location 202. Assemble the code and then use dump command to display the byte values from location 200 to 210.

b) Use Fill command to fill memory location from 100 to 110 with digit 20h. Search digit 20h within range 100 to 120. Display the result. Then search digit 5h within range 100 to 120. Display the results.

Question No.2: Submit the correct code as .ASM file. **(10)**

The following program calculates the sum of list1 and list2 individually. Then it stores the result of both list1 and list2 in a variable called sum. The value of sum is moved in register DX to verify the result. Remove all errors in program so that it shows the correct output in DX register which should be 02DBh.

Note: Don't change any data definition directive. You can only modify .CODE part of this program.

```
org 100h
.data
 list1 db 10h,20h,30h
 list2 dw 0C2h,0D4h,0E5h
 sum dw 0

.code
main proc

   mov ax,0000h
   mov bx,offset list1
   mov al,[bx]
   add al,[bx+1]
   add al,[bx+2]
   mov sum, al
   mov ax,0000h
   mov bx,offset list2
   add al,list
   add ax,[list+1]
   add ax,list+2
   add sum, ax
   move dx, sum

   mov ax,  4C00h
   int 21h

main endp
end main
```

Question No.3: Write following program using emulator and submit code as .ASM file.   **(10)**

Define a variable "arr" which can hold five numbers. Initialize all numbers with zero using assembly language command. Declare a variable sum and initialize it with zero. Input five numbers from user. If the number entered by user is even, store this number in "arr" and then add this number to variable sum. Otherwise display a message "You have entered an odd number. Enter Again". When user has entered all five even numbers, display the value of sum on console.

OR

Write a program that asks user to enter a string and a character. Then search character in the string. If that character is present in the string, display message "Match Found", otherwise display message "No Match Found". The search must handle both uppercase and lower case characters i.e. if string is "my string" and character is "G", it should display "Match Found".