



Microprocessor & Assembly Language

Exam: Mid-Term

Instructor: Muhammad Amin

Program: BS (CS)

Semester: Summer 2020

Course/EDP Codes: CSC-304/102007054

Total marks: 30

Date: August 22, 2020

Timing: 9:00 am – 1:00 pm

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- Q.1** Give answers to each of the following: (1.5 x 5 = 7.5)
- a) Discuss the Virtual machine concept using examples.
 - b) Explain different registers used in x86 32-Bit processors.
 - c) Discuss different features of Intel P965 Express Chipset.
 - d) Elaborate different I/O levels involved in displaying a string of characters.
 - e) Explain different instruction mnemonics having zero, one, and two operands.
- Q.2** Differentiate each of the following: (1.5 x 5 = 7.5)
- a) Real address mode and protected mode
 - b) Instruction and directive
 - c) Equal-sign directive and EQU directive
 - d) Data label and code label
 - e) Status flags and control flags
- Q.3** Solve each of the following: (1.5 x 4 = 6)
- a) If $W = 11101100$, $X = 00010011$, and $Y = 00111100$, then find $Z = W \vee X \wedge \neg Y$.
 - b) Create a truth table for the Boolean function described by $\neg A \wedge \neg B$.
 - c) Using the value -1, write it as an integer literal in decimal, hexadecimal, octal, and binary formats that are consistent with MASM syntax.
 - d) Write the real number -3.7×10^7 as a real number literal using MASM syntax.
- Q.4** Attempt each of the following: (1.5 + 1.5 + 2 + 4 = 9)
- a) Show the order of individual bytes in memory for the following doubleword variable using little endian order: `dVal DWORD 87654321h`
 - b) Write a statement that causes the assembler to calculate the number of bytes in the following string and assign the value to a symbolic constant named `Size_String`:
`myString byte "I am a student of INU.", 0`
 - c) Write a program that calculates the following expression, using registers:
 $D = (C + B) - A$
Assign integer values to the EAX, EBX, and ECX registers.
 - d) Write a program that performs arithmetic operations on different 32-bit memory operands and stores the result in memory. Give stepwise explanation of each statement.

*****End of Exam*****
