



COMSATS UNIVERSITY ISLAMABAD
DEPARTMENT OF COMPUTER SCIENCE
Mid Term Examination, Fall 2022

Class/Section: -BS (CS) – 6A & 6B
Subject: - Computer Organization and Assembly Language
Instructor: - Taimur Shahzad

Marks: - 25
Time: - 1.5 HRS
Dated: - 16th November 2022

[CLO - 1]

QUESTION NO.01: - What are the basic steps in the instruction execution cycle? Also name the CPU register that: Fetch decode [Marks - 05]

- holds the address of next instruction to be executed.
- holds the instruction currently being executed.
- is connected to data bus?
- is connected to address bus?

[CLO - 1]

QUESTION NO.02: - Write down all the steps involved in IEEE Standard 754 Floating-Point Representation for x86 Processors. Convert -85.125 to IEEE FPS format (single precision). [Marks - 05]

[CLO - 2]

QUESTION NO.03: - Differentiate between Pipelined vs Non-Pipelined Processor System. Explain Pipelined and Non-Pipelined System with an appropriate example having at least 11-Instructions by calculating its Clock Cycle (CC), Total Clock Cycle (TCC), Clock Per Instruction (CPI), Speed Up, Efficiency/Utilization. [Marks - 05]

[CLO - 4]

QUESTION NO.04: - Let's assume that the data segment begins at 0x000FFA00. What will be the value of EBX register in hex after the execution of each of the following instructions in code segment: [Marks - 05]

```
.data
Var1  BYTE    160, 170, 180, 190, 200
Var2  WORD    3 DUP (13)
Var3  DWORD    12ABCDEFh, 5544FFh

.code
---
mov  ebx, OFFSET Var3+1
mov  bx,  WORD PTR Var1+4
mov  ebx, LENGTHOF Var2
mov  ebx, TYPE Var1
mov  ebx, SIZEOF Var3
```

c8
13
0000
00
EBX = 000FFA0C
EBX = 000F0DC8
EBX = 00000003
EBX = 00000001
EBX = 00000008

[CLO - 4]

QUESTION NO.05: - Given below the data segment, write instructions in assembly language that copies the elements of array Arr1 to array Arr2. You must use base register addressing mode in your instructions. [Marks - 05]

```
.data
Arr1  WORD    1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
Arr2  WORD    20 DUP(?)
```

Best of Luck