



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

Hania Nadeem

Class/Section: -BS (CS) – 6A & 6B

Subject: - Computer Organization and Assembly Language

Instructor: - Taimur Shahzad

Marks: - 25

Time: - 1.5 HRS

Dated: - 10th May 2023

[CLO – 1]

✓ QUESTION NO.01: - What are the basic steps in the instruction execution cycle? Also name the CPU register that:

[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: - Define Superscalar Architecture. Why Superscalar Processors can be added up to current processors in market now a days.

[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 – 2]

QUESTION NO.04: - How the variables declared in the following data segment will be organized in the RAM in the case of x86 processors. Show the byte wise content of RAM in hex.

[Marks - 05]

```
.data
u real4 -1.5
v sword -1
w qword 1A69h
x word 10101111b, 15
y byte "ABC"
z dword 32Fh
```

[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
List1 WORD 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
List2 WORD 20 DUP(?)
```

Best of Luck