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| Total Pages: 3 |

Bahria University



Lahore Campus

# Final Term Exams (Spring-2023 Semester)

*Department of Computer Sciences*

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| Paper Show Date & Time: 23**/06/2023 & 2:30 - 4:30** |

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| **Exam Date & Time** | **23/06/2023 & 2:30 - 4:30** | **Session** | **Spring 2023** |
| **Instructor Name** | **Maryam Munawar** | **Program/Semester:** | **3rd** |
| **Course Title** | **Computer Organization & Assembly language Lab** | **Course Code:** | **CEN-222** |
| **Time Allowed** | **120 mins** | **Max Marks** | **30** |

**Instructions:**

**I. Attempt all questions**

**Student Name** ……………………………. **Enrollment Number**:………………………………

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| **Evaluation of CLO** | **Ques # / Part #** | **Marks** | **Obtained Marks** |
| **CLO1:** Acquire the basic knowledge of computer organization, computer architecture and assembly language. | Q1 | 10 |  |
|  |  |
|  |  |
| **CLO2:** Implement the arithmetic logical operation using Instruction set architecture (ISA) at ALU & memory units. | Q2 | 10 |  |
|  |  |
|  |  |
| **CLO3:**  Solve the problems related to computer organization and assembly language. | Q3 | 10 |  |
|  |  |
| **Total Marks** | | **30** |  |
|  | |  |  |

**SUBJECTIVE TYPE**

**Read out the Instructions carefully.**

All Questions are compulsory.

**CHEATING IS NOT TOLERABLE** anyone found doing cheating will be graded as zero, Try to attempt your paper as per your knowledge that will be surely graded.

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**Question 1: (5\*2=10 Marks)**

1. Swap- take two input parameters, swap them using only the XOR operation.
2. Correct the following program.

.text

main:

li $v0, 4

la $a0, result1

syscall

li $v0, 1

li $a0, 4

syscall

li $v0, 4

la $a0, result2

syscall

li $v0, 1

li $a0, 8

syscall

addi $v0, $zero, 10 #Exit program

syscall

.data

result1: .ascii "\nfirst value = "

**Question 2: (10 Marks)**

Convert the following Pseudo code to the assembly language code.

### Subprogram PrintIntArray(array, size)

### {

### print("[")

### for (int i = 0; i < size; i++)

### {

### print("," + array[i])

### }

### print("]")

### }

**Question 3: (10 Marks)**

Convert the following Pseudo code to the assembly language code.

subprogram global main()

{

register int multiplicand

register int multiplier

register int answer

m = prompt("Enter the multiplicand")

n = prompt("Enter the multiplier")

answer = Multiply(m, n)

print("The answer is: " + answer)

}

subprogram int multiply(int m, int n)

{

if (n == 1)

return m;

return m + multiply(m,n-1)

}