# BAHRIA UNIVERSITY (KARACHI CAMPUS)

MIDTERM EXAMINATION – FALL SEMESTER – 2020

## Computer Organization and Assembly language _CEN-324

Class: BSCS-3(A/B) Morning

Course Instructor: **Aisha Danish** Time Allowed: **90 min**

Date: **09-12-20** Session**: I** Max Marks: 12

Student's Name: _______ Reg. No: _____

## SUBJECTIVE

**Note:** Attempt all questions

***Instructions:***

*In order to avoid any run time electricity and internet unavailability situation, it is suggested that keep your laptop fully charged. Also activate 3G/4G connection as an alternative of Wi-Fi/internet option to upload your paper.*

*In addition to upload your paper to LMS, it is mandatory to email the solution to course instructor (email address: **aishadanish.bukc@bahria.edu.pk**).*

*Mid exams comprise of 20 marks, where 08 marks will be based on viva voce performance.*

*Plagiarized/copied solution will be marked ZERO*

**Question no. 01** **[3]**

Consider the hardware organization of a system in Figure 1, illustrate which components are involved in reading the hello command from the keyboard and writing the output string from memory to the display.

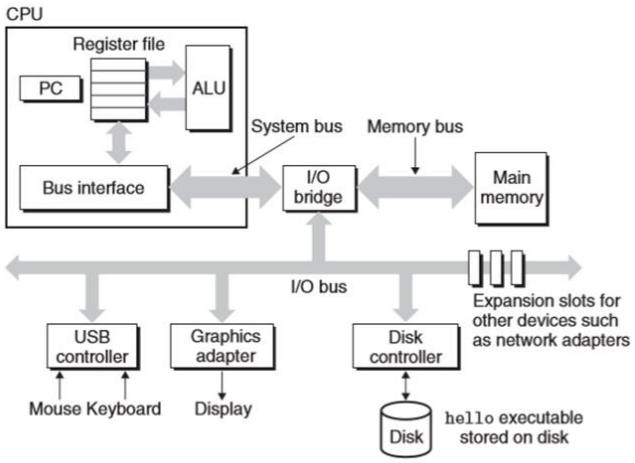



**Figure 1**

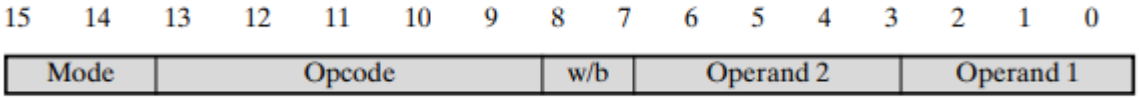
**Question no. 02** **[2+1]**

(a) Give two examples of 8086 Interrupts and define their function.

(b) What is meant by a one-to-many relationship when comparing a high-level language to machine language? Give an example.

**Question no. 03** **[3]**

The 16-bit Zilog Z8001 has the following general instruction format:




The mode field specifies how to locate the operands from the operand fields. The w/b field is used in certain instructions to specify whether the operands are bytes or 16-bit words. The operand 1 field may (depending on the mode field contents) specify one of 16 general-purpose registers. The operand 2 field may specify any general-purpose registers except register 0. When the operand 2 field is all zeros, each of the original opcodes takes on a new meaning.

a. How many opcodes are provided on the Z8001?
b. Suggest an efficient way to provide more opcodes and indicate the trade-off involved.
c. Why there is a need to specify if an operand is a byte or a word?

**Question no. 04** **[3]**

Given the following memory values and a one-address machine with an accumulator, with the help of diagram show that what values do the following instructions load into the accumulator? Make assumptions wherever necessary.

| | |
|---|---|
| 50 | 70 |
| 40 | 60 |
| 30 | 50 |
| 20 | 40 |

- LOAD REGISTER 50
- LOAD REGISTER INDIRECT 20
- LOAD INDIRECT 20
- LOAD DIRECT 40
- LOAD INDIRECT 30