TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR BACHELOR OF TECHNOLOGY IN INFORMATION COMMUNICATION TECHNOLOGY & BACHELOR OF TECHNOLOGY IN INFORMATION TECHNOLOGY
(BTICT & BTIT M11/FT)

EIT 4304: COMPUTER ARCHITECTURE & ORGANIZATION

END OF SEMESTER EXAMINATION
SERIES: APRIL 2013
TIME: 2 HOURS

<u>**Instructions to Candidates:**</u>
You should have the following for this examination
- *Answer Booklet*

This paper consists of **FIVE** questions. Attempt question **ONE** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **TWO** printed pages

Question One (Compulsory)

a) Explain the following terms:
   (i)   Bus
   (ii)   Bus arbitration
   (iii)   Interrupt
   (iv)   Peripheral Computer Interconnect(PCI)   **(10 marks)**

b) Explain the difference between the following terms:
   (i)   "Registers" and "Cache Memory"
   (ii)   "Computer Organization" and "Computer Architecture"
   (iii)   "Computer Function" and "Computer Structure"   **(12 marks)**

c) State any **THREE** reasons why peripherals are not directly connected to the system bus.
                                                                                      (4 marks)

d) Explain the following terms:

(i)   Internal memory
    (ii)   External memory
    (iii)   Redundant Array of Independent Risks (RAID)   (4 marks)

Question Two

a) Explain the following major functions or requirements for I/0 module.
    (i)   Error detection
    (ii)   Processor communication
    (iii)   Device communication
    (iv)   Data buffering
    (v)   Control and timing   **(10 marks)**

b) Outline how the employment of a hierarchical memory organization in a typical computer system results in overall system results in overall system performance enhancement at more acceptable cost.   **(10 marks)**

Question Three

a) Explain the following characteristics of memory systems:
    (i)   Location
    (ii)   Capacity
    (iii)   Unit of transfer
    (iv)   Word
    (v)   Transfer rate   **(10 marks)**

b) State the **THREE** common characteristics of RAID design architectures.   **(3 marks)**

c) Explain the **TWO** drawbacks of programmed and interrupt-driven input/output.   **(2 marks)**

d) Explain how the RAID technology may be used for the enhancement of reliability and performance of a computer system.   **(5 marks)**

Question Four

a) Explain the following components of the system bus:
    (i)   Data bus
    (ii)   Address bus
    (iii)   Control bus   **(6 marks)**

b) Explain any **FOUR** types of registers found in the CPU   **(4 marks)**

c) State any **FOUR** attributes:
    (i)   Computer architecture
    (ii)   Computer organization   **(4 marks)**

d) State any **THREE** arithmetic and **THREE** logic operations performed by Arithmetic and logic unit of Intel 8085 microprocessor.

Question Five

a) The complete instruction set of intel 8085 microprocessor can be grouped in **FIVE** functional groups. Explain these functional groups.   **(10 marks)**

b) Explain why Intel 8085 microprocessor is the most popular micro processor used by vendors.

(2 marks)

c) The microprocessors that are available today come with a variety of capabilities and architectural features. Explain the **FOUR** functional components which form the central processing unit.

(8 marks)