TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR DEGREE IN:
BACHELOR OF TECHNOLOGY IN INFORAMTION TECHNOLOGY
BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY
(BTIT & BSIT)

EIT 4304: COMPUTER ARCHITECTURE & ORGANIZATION

END OF SEMESTER EXAMINATION
SERIES: DECEMBER 2014
TIME: 2 HOURS

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

This paper consists of **FIVE** questions. Attempt question **ONE (Compulsory)** 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) Distinguish between the following terms:
    (i) "Computer Architecture" and "Computer Organization"
    (ii) "Complex Instruction Set Computing" and "Reduced Instruction Set Computing"
    (iii) "Data Bus" and "Address Bus"
    (iv) "Cache Memory" and "Registers" **(16 marks)**

b) State any FOUR attributes associated with computer architecture **(4 marks)**

c) State any FOUR advantages of assembly language over machine language programming
(4 marks)

d) Explain the following terms:
    (i) Parallel processing

(ii) Direct memory access **(4 marks)**

Question Two

a) The occurrence of an interrupt triggers a number of events, both in hardware and software. Outline the sequence of hardware events that occur when I/0 device completes and I/0 operation
(10 marks)

b) Using a block diagram of a microprocessor, describe its various components. **(10 marks)**

Question Three

a) As compute technology has evolved, computer designers name sought more and more opportunities for parallelism. Flynn taxonomy identify three ways of categorizing computers systems with parallel processing capabilities. Explain:
   (i) Single Instruction, Multiple Data System
   (ii) Multiple Instruction, Single Data System
   (iii) Multiple Instruction, Multiple Data System **(6 marks)**

b) (i) Define the term "Symmetric Microprocessor (SMP) **(2 marks)**
   (ii) Explain THREE advantages of symmetric microprocessor over uniprocessor architecture.
   (6 marks)

c) Explain any THREE functional groups of Intel 8085 microprocessor **(6 marks)**

Question Four

a) Explain the difference between "Internal Memory" and "External Memory" **(4 marks)**

b) Explain the following terms:
   (i) Disk array
   (ii) Disk striping **(4 marks)**

c) Using suitable diagrams, (where applicable) explain the SIX levels of Redundant Arrays of Independent Disks (RAID) **(12 marks)**

Question Five

a) Modern-day computer different interfaces. Explain the following types of interfaces:
   (i) High-Definition Multimedia Interface (HDMI)
   (ii) Peripheral component interconnection (PCI)
   (iii) Universal Serial Bus (USB) **(6 marks)**

b) Explain the difference between "serial port" and "parallel port" **(4 marks)**

c) A sample of assembly language program written for Intel 8085 microprocessor is given below: Write a program that performs the following:

LDA 1000H

MOV B, A

LDA 1001 H

ADD B

STA 1002H

HALT

Explain the function of each lien of the code   **(10 marks).**