THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of Jkuat)

Faculty of Engineering and Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

CERTIFICATE IN COMPUTER NETWORKS & MAINTENANCE
CMNT 10A

EIT 1118: COMPUTER APPLICATIONS

SPECIAL/SUPPLEMENTARY EXAMINATION
SERIES: OCTOBER 2011
TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination
- *Answer booklet*

Answer question **ONE (COMPULSORY)** in section A and any other **TWO** questions from section B
Maximum marks for each part of a question are clearly shown.
This paper consists of **THREE** printed pages

SECTION A – Compulsory

Question 1 (30 marks)

a) Explain the Von Neumann principle [3 marks]

b) Define Instruction Set Architecture. [2 marks]

c) List 2 performance considerations for I/O subsystems. [2 marks]

d) Why might we want more than one level of a cache? [3 marks]

e) Identify any two advantages of using virtual memory. [2 marks]

f) Explain any three functions of a computer system [6 marks]

g) Differentiate primary storage from secondary storage? [4 marks]

h) Explain in detail semiconductor RAM technology [8 marks]

SECTION B (ANSWER ANY TWO QUESTIONS)

Question 2   (20 marks)

a) Explain in detail the following I/O mechanisms [9 marks]
   i) Programmed I/O
   ii) Interrupt driven I/O
   iii) Direct Memory Access (DMA)

b) State the meaning of the following [3 marks]
   i) Bit
   ii) Byte
   iii) Computer word

c) What is memory hierarchy? Illustrate using suitable examples [7 marks]

d) What is an interrupt? [1 marks]

Question 3   (20 marks)

a) What are registers? Give four examples of registers [4 marks]

b) Explain any two ways of representing negative numbers in the computer system [6 marks]

c) With the aid of a well labeled diagram showing the flow of data between the functional units into and out of the ALU, explain the function of the ALU [10 marks]

Question 4   (20 marks)

a) "Dynamic memory needs refresh but static memory does not." Explain this sentence, describing the two memory types, their access times and their usage. [12 Marks]

b) Explain how cache memory works and why it is needed? [8 Marks]

Question 5   (20 marks)

a) Describe in detail how information is stored on a hard disk, in terms of how individual bits of data are stored and also the large scale structuring of the disk.   [12 Marks]

b) Discuss the factors that control the time it takes to retrieve an item of data from the disk into main memory.
                                                                                                        [8

    Marks]