



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of Jkuat)

Faculty of Engineering and Technology

**DEPARTMENT OF COMPUTER SCIENCE & INFORMATION
TECHNOLOGY**

**CERTIFICATE IN COMPUTER MAINTENANCE & NETWORK
TECHNOLOGY
(CMNT 10A)**

EIT 1117: COMPUTER ARCHITECTURE

END OF SEMESTER EXAMINATIONS

SERIES: AUGUST/SEPTEMBER 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**

This paper consists of **THREE** printed pages

SECTION A (30 marks)

Question 1 (Compulsory)

- a) State the difference between computer organization and architecture (4 marks)
- b) Distinguish between static and dynamic RAM (4 marks)
- c) Describe the components of processor (8 marks)
- d) State any **FOUR** functions of processor (4 marks)
- e) Explain the Von Neumann Principle (5 marks)
- f) With the aid of a well labeled structure, describe the function of ALU (5 marks)

SECTION A (40 marks)

Question 2 (20 marks)

- a) Explain the functions of CPU (4 marks)
- b) Explain the fetch execute cycle (5 marks)
- c) Describe the register organization (6 marks)
- d) Explain the instruction cycle (5 marks)

Question 3 (20 marks)

- a) Describe the following types of memories (6 marks)
 - (i) Cache memory
 - (ii) RAM
 - (iii) ROM
- b) Perform the following operations (4 marks)
 - (i)
$$\begin{array}{r} 00101110 \\ + \\ 00011110 \\ \hline \end{array}$$
 - (ii)
$$\begin{array}{r} 00101110 \\ - \\ 00011110 \\ \hline \end{array}$$
- c) Describe any **THREE** ways of representing integers (6 marks)
- d) Describe the following performance characteristics of internal memory (4 marks)
 - (i) Transfer rate
 - (ii) Access time

Question 4 (20 marks)

- a) Define I/O process (1 mark)
- b) Briefly explain the following I/O mechanisms (9 marks)
- (i) Programmed I/O
 - (ii) Interrupt-Driven I/O
 - (iii) Direct Memory Access (DMA)
- c) Briefly explain the difference between RISK CISC architecture (4 marks)
- d) State any **THREE** advantages of: (6 marks)
- (i) RISC architecture
 - (ii) CISC architectures

Question 5 (20 marks)

- a) What is an Instruction Set? Explain any **THREE** elements of an instruction (7 marks)
- b) Briefly explain any **THREE** types of instructions (6 marks)
- c) What is an addressing mode? State any **THREE** addressing modes (4 marks)
- d) Explain the functions of Bus (3 marks)