



# THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of Jkuat)

*Faculty of Engineering and Technology*

**DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY**

UNIVERSITY EXAMINATION FOR DEGREE IN  
BACHELOR OF TECHNOLOGY ICT (Btech. ICT 11M)

**EIT 4101 : INTRODUCTION TO COMPUTERS**

END OF SEMESTER EXAMINATIONS

**SERIES: AUGUST/SEPTEMBER 2011**

**TIME: 2 HOURS**

## **Instructions to Candidates:**

You should have the following for this examination

- *Answer Booklet*

This paper consist of **FIVE** questions in **TWO** sections **A & B**

Answer question **ONE (COMPULSORY)** and any other **TWO** questions

Maximum marks for each part of a question is as shown

This paper consists of **THREE** printed pages

## **SECTION A (Compulsory – 30 MARKS)**

### **Question 1**

- a) (i.) Briefly explain the issues that are addressed by the Programmable Data Processor model in comparison to Data Processor model
- (ii.) What does a programmable data processor model require to produce output data? Outline (4 marks)
- b) (i.) Give the **THREE** concepts that constitute the Von Neumann model.  
(ii.) What is the function of each of the four subsystems in the Von Neumann machine? Outline. (9 marks)
- c) Define the term address and then explain what is meant by the term an address space. Hence compute the address space of a computer with a memory of 16MB and a word size of 8 bits. (4 marks)

- d) How many bit patterns are wasted if you use a 5 – bit pattern to represent the symbols in a hexadecimal number system? Discuss (4 marks)
- e) Change the 8-bit two’s complement number 11011001 to decimal (2 marks)
- f) If each type of data in multimedia content were to be represented in its type of a Computer, then what type of computer we would produce for each? Give the type of computer that we would produce and explain your answer (3 marks)
- g) (i.) Why is an Input/Output controller important? Explain  
(ii.) Distinguish between a serial controller and parallel controller (4 marks)

**SECTION B (Attempt any TWO questions)**

**Question 2 (20 Marks)**

- a) What are the **THREE** subsystems that make up a computer? Outline (3 marks)
- b) Define the term register. Distinguish between the Program Counter (PC) and Instruction register (IR) (3 marks)
- c) What does the term peripheral device mean to you? Explain. As you explain give three peripheral devices you know. (4 marks)
- d) Discuss the levels of memory speed and the type of memory that uses each. (6 marks)
- e) What is the purpose of cache memory? Explain. (2 marks)
- f) What is the difference between SRAM and DRAM? Discuss. (2 marks)

**Question 3 (20 Marks)**

- a) (i.) How many symbols can be represented by a bit pattern with 10 bits? Evaluate.  
(ii.) Compute the length of a bit pattern that will be used to represent each symbol in a set of 64 symbols (6 marks)
- b) Whose responsibility is it to know the type of data a stored bit pattern represents in memory? Discuss (2 marks)
- c) What is the relationship between the length of a bit pattern and the number of symbols in a language? With the aid of an example explain this relationship. (3 marks)
- d) A computer has 128 MB of memory. How many bits are needed to address each single word in memory, if each is 32 bits? Compute (5 marks)
- e) How many bytes of memory are needed to store a full screen of data if the screen is made up of 32 lines with 80 characters each line? The system uses ASCII code, with each ASCII character stored as a byte (4 marks)

**Question 4 (20 Marks)**

- a) Define each of the following terms:  
i. icon

- ii. toolbar
  - iii. short cut
  - iv. hot key
  - v. pop menu
- (5 marks)

- b) (i.) Define the term software.  
(ii.) Give the **TWO** classes of software that you know.  
(iii.) What is an operating system? Define. As you define give the two design objectives of any operating system (6 marks)
- c) (i.) Define the term system clipboard.  
(ii.) Distinguish between the two system clipboard operations cut and copy.  
(iii.) Give the short cut keys of invoking the three clipboard operations cut, copy and paste. (6 marks)
- d) Define the term folder and briefly explain how files are generally organized in a Windows operating system (3 marks)

**Question 5 (20 Marks)**

- a) (i.) What distinguishes the process of addressing an input/output device from addressing main memory? Discuss.  
(ii.) Briefly describe the **TWO** methods used to handle the addressing of I/O devices. (8 marks)
- b) There are **THREE** basic steps in a machine cycle namely fetch, decode and execute. In your own words try to explain what each step entails (6 marks)
- c) The three methods of synchronization of transfer of data from I/O devices to the CPU and memory are: programmed I/O, interrupt driven I/O and direct memory access (DMA). Briefly explain how each achieves its synchronization in its transfer of data from I/O devices to the CPU and memory (6 marks)