



TECHNICAL UNIVERSITY OF MOMBASA

INSTITUTE OF COMPUTING AND INFORMATICS

DEPARTMENT OF MATHEMATICS & PHYSICS

UNIVERSITY EXAMINATION FOR:

BACHELOR OF MATHEMATICS AND COMPUTER SCIENCE

EIT 4154: COMPUTER ARCHITECTURE AND ORGANIZATION

END OF SEMESTER EXAMINATION

SERIES: APRIL 2016

TIME: 2 HOURS

DATE: Pick Date Select Month Pick Year

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

Question ONE

- a) Explain the difference between the following terms: (12 marks)
- (i) "Computer architecture" and "Computer organisation"
 - (ii) "Computer Function" and "Computer Structure"
 - (iii) "Cache Memory" and "Registers"
- b) Explain the meaning of the following in relation to computer hardware. (6 marks)
- i) Single Core CPU
 - ii) Dual Core CPU
 - iii) Firmware
- c) Using an appropriate example, describe the concept of the CPU clock. (3 marks)
- d) The motherboard is the olive green or brown circuit board that lines the bottom of the computer. Most of the time, motherboard fails and its failures commonly fall into three types or categories. State and explain them. (9 marks)

Question TWO

- a) State and explain the three components of the system buses. (6 marks)
- b) Explain any two benefits that one will gain by upgrading a computer memory. (4 marks)
- c) Most of the noise in the computer is coming from the various fans inside the computer. State and explain the functions of any three fans inside the computer case. (6 marks)
- d) Differentiate between the ROM and RAM. (4 marks)

Question THREE

- a) A chipset is a collection of chips or circuits that perform interface and peripheral functions for the processor. The functions of chipsets can be divided into two major functional groups. Name and explain these two major functional groups. (10 marks)
- b) Using a diagram of a Von Neumann model/Architecture explain the concept for designing and building computers. (10 marks)

Question FOUR

- a) Highlight four Issues to consider before buying a RAM. (4 marks)
- b) The main role of the CPU is to execute instructions. Explain the steps involved during the execution of an instruction. (8 marks)
- c) Write the following abbreviations in full. (5 marks)
- i) BIOS
 - ii) AGP
 - iii) POST
 - iv) EPROM
 - v) CMOS
- d) Highlight three reasons why an I/O device or peripheral device is not directly connected to the system bus. (3 marks)

Question FIVE

- a) Explain the following terms and state how they affect system performance. (6 marks)
- i) Bus width
 - ii) Word size
- b) Your PC has to keep certain settings in a CMOS when it's turned off and its power cord is unplugged. Highlight any four of these settings. (4 marks)
- c) Briefly differentiate RISC machine from CISC machines. (4 marks)
- d) One of the most interesting, and most analyzed, aspects of computer design is instruction set design. The instruction set defines the functions performed by the CPU. The instruction set is the programmer's means of controlling the CPU. Thus programmer requirements must be considered in designing the instruction set. State and explain any three most important and fundamental design issues. (6 marks)