



TECHNICAL UNIVERISTRY OF MOMBASA

# Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR DEGREE IN:  
BACHELOR OF TECHNOLOGY IN INFORMATION TECHNOLOGY  
(BTIT 12J – Y3 S1)

**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

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**Question One (Compulsory)**

- a) State any TWO types of Read Only Memory **(2 marks)**
- b) Explain the term “Complementary Metal Oxide Semiconductor (CMOS)” **(2 marks)**
- c) Explain the difference between the following terms:  
(i) “Firmware” and “Software”  
(ii) “Random Access Memory” and “Read Only Memory”  
(iii) “Magnetic Storage” and “Optical Storage”  
(iv) “Input Devices” and “Output Devices” **(16 marks)**
- d) For each of the first FOUR computer generations, identify the major electronic component and any other ONE major characteristics **(8 marks)**
- e) Explain the following terms as used in storage media.  
(i) Sector

(ii) Cylinder (2 marks)

### Question Two

- a) Explain the term “Central Processing Unit” (2 marks)
- b) Explain the major components of the Central Processing Unit. (8 marks)
- c) Explain how the Central Processing Unit uses the FOUR steps of a machine cycle to process data. (8 marks)
- d) Explain the term Registry (2 marks)

### Question Three

- a) Explain the term “Operating Systems” (2 marks)
- b) Explain the following terms:  
(i) Utility Programs  
(ii) Device Drivers  
(iii) System Unit (6 marks)
- c) Explain any FOUR components of an operating system (4 marks)
- d) During startup, a computer performs several routines. Explain the following terms:  
(i) Power-On-Self Test  
(ii) Col Boot  
(iii) Basic Input Output System (BIOS)  
(iv) Beep-code (8 marks)

### Question Four

Computer can be classified according to size and technology. Describe each classification, highlighting the sub-categories. (20 marks)

### Question Five

- a) The contents of the memory can be accessed using various techniques. Describe the following access modes stating a suitable example of a storage device:  
(i) Sequential Access  
(ii) Random Access  
(iii) Direct Access (9 marks)
- b) Convert the following numbers to the new bases indicated:  
(i) 31910 (Base 8)  
(ii) 1AC – E316 (Base 10)  
(iii) 2510 (Base 2) (6 marks)
- c) Evaluate the following:  
(i)  $11.01_2 + 111.1_2 + 101.101_2$  (2 marks)  
(ii)  $100100_2 \div 110_2$  (3 marks)