



TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY
(DICT SEP12/S-EV)

EIT 2102: COMPUTER SYSTEM & ORGANIZATION

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: JULY 2013

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consist of **FIVE** questions

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

Maximum marks for each part of a question are as shown

This paper consists of **THREE** printed pages

Question One (Compulsory)

- a) Define computer organization and briefly explain how it differs with computer architecture. **(6 marks)**
- b) Find the output decimal number after performing the following binary operations: **(6 marks)**
- (i) $111.01 + 10.111$
 - (ii) $11.01 + 110.11$
 - (iii) $1100 + 0011$
- c) The system bus of a computer system comprises of the data bus, address bus and control bus. Explain the functions of each of the three. **(6 marks)**
- d) Define an “operating system” and state its purpose in a computer system. **(2 marks)**

Question Two

- a) State the key characteristics of each of the following types of memories. **(8 marks)**
- (i) DRAM
 - (ii) SRAW
 - (iii) ROM
 - (iv) EEPROM
- b) Convert the octal number 577_8 to the following: **(6 marks)**
- (i) BCD
 - (ii) Decimal
 - (iii) Hexadecimal
- c) With the aid of a block diagram, discuss the basic structure of a processor. **(6 marks)**

Question Three

- a) Explain the difference between serial and parallel data transmission. **(4 marks)**
- b) Explain **TWO** factors that should be considered when upgrading a computer memory. **(6 marks)**
- c) (i) A modern processor memory is constructed from a hierarchy of memories. Explain what the levels of the hierarchy are. **(4 marks)**
- d) What are the relative latency and bandwidth characteristics of each levels in Q(c) (i) above. **(6 marks)**

Question Four

- a) Explain the following terms as used in data organization in computer systems. **(8 marks)**
- (i) Bit
 - (ii) Computer word
 - (iii) Nibble
 - (iv) Byte
- b) State and briefly explain any **FOUR** generation of computers. **(8 marks)**
- c) Explain the concept of virtual memory. **(4 marks)**

Question Five

- a) Differentiate between single versus two-level caches. **(4 marks)**
- b) State any **TWO** input and **TWO** output devices that are used alongside with the computer system. **(4 marks)**
- c) With the aid of a well labeled diagram, explain the organization of the operating system. **(6 marks)**
- d) Explain any **THREE** functions of the operating system. **(6 marks)**