

CHUKA



UNIVERSITY

## UNIVERSITY EXAMINATIONS

CHUKA/ THARAKA

FIRST YEAR EXAMINATION FOR THE AWARD OF DIPLOMA IN

COMPUTER SCIENCE

COSC 0101: INTRODUCTION TO COMPUTER SYSTEMS

STREAMS: DIPLOMA COMP SCI.

TIME: 2 HOURS

DAY/DATE: MONDAY 4/12/2017

2.30 P.M – 4.30 P.M

### INSTRUCTIONS:

- Answer question **ONE** and **TWO** other questions
- Do not write anything on the question paper
- This is a **closed book exam**, no reference materials are allowed in the examination room
- There will be **NO** use of mobile phones or any other unauthorized materials
- Write your answers legibly and use your time wisely.

### SECTION A

#### Question one (30 marks)

- Explain what you understand by the following terms.
  - Most Significant Bit (MSB) and Least Significant Bit (LSB) [2 marks]
  - SRAM and DRAM [2 marks]
- Computers play a major role in Government. Describe four ways that government applies computers to deliver services to its citizens. [4 marks]
- Perform the following binary arithmetics.
  - Add  $1010_2$ ,  $1001_2$  and  $1101_2$ . [3 marks]
  - Multiply  $101_2$  and  $101_2$  [3 marks]
- Today's world is an information rich-world and it has become a necessity for people to use computers to perform well in their duties, Outline **five** characteristics of computers that make them widely used. [5 marks]
- Explain and give an example of the term volatile and non-volatile with regard to computer memory. [4 marks]
- Name two standard methods used by computers in internal character representation. [2 marks]

- g. Computer system is comprised of physical components and the data stored in it.  
Describe five ways used to care and maintain computer systems. [5 marks]

**SECTION B: choose two question only**

**Question two (20 marks)**

- a. A port is a hardware connection interface on a personal computer that enables devices to be connected to the computer. Distinguish the following types of connections.
- i. Serial connection [2 marks]
  - ii. Parallel connection [2 marks]
  - iii. USB connection [2 marks]
- b. In an overview, operating system is a program that acts as an interface between the user and the computer hardware. Explain other **five** functions of operating system. [10 marks]
- c. Data can either be in form of text or instructions, a picture, sound and video. Give corresponding input devices to these forms of data. [4 marks]

**Question three (20 marks)**

- a. Von Neumann architecture is composed of three distinct: a central processing unit (CPU), memory, and input/output (I/O) interfaces. With aid of a diagram discuss the concept of programmable machine. [12 marks]
- b. The main role of the CPU is to execute instructions. Explain steps involved during the execution of an instruction. [8 marks]

**Question four (20 marks)**

- a. Perform the following operations
- i. Convert  $110.011_2$  to decimal [3 marks]
  - ii.  $1100_2 \div 101_2$  [3 marks]
  - iii.  $0.6_{10}$  to binary [2 marks]
  - iv.  $2CD_{16}$  to decimal [2 marks]
- b. You are the I.C.T manager of an organization and you are requested to give the best specification in order to purchase computers. Discuss five factors you would consider during purchase. [10 marks]

**Question five (20 marks)**

- a. The system bus is the main communication path between the CPU and memory. Explain three types of these buses. [6 marks]
  - b. Software refers to a set of instructions that tell a computer what to do and how to do it. Giving examples differentiate between System software, Application software and Utility software. [9 marks]
  - c. Operating systems were there from the very first computer generation and they keep evolving with time. Describe five types of operating systems which are most commonly used. [5 marks]
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