CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATIONS

CHUKA AND THARAKA CAMPUSES

EXAMINATION FOR THE AWARD OF DIPLOMA IN COMPUTER SCIENCE

COSC 0101: INTRODUCTION TO COMPUTER SYSTEMS

STREAMS: DIP COMP SCI.   **TIME: 2 HOURS**

DAY/DATE: FRIDAY 14/12/2018   **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)

a. Define the following terminologies in regard to memory:
   i.   Random access. [2 marks]
   ii. Latency. [2 marks]

b. Using an illustrative diagram, describe the functional components of a programmable machine based on the von Neumann model. [6 marks]

c. Registers are essential in memory WRITE and READ operations. Highlight the steps involved to perform a WRITE operation into a specified memory location. [3 marks]

d. Hardware and software are mutually dependent on each other. Both of them must work together to make a computer produce a useful output. Outline relationship between hardware and software. [3 marks]

e. Calculate 101101_2 divided by 110_2. [3 marks]

f. Most computers come pre-equipped with windows 7 starter edition. Name other three versions from starter. [3 marks]

g. Highlight five characteristics of first-generation computers. [5 marks]

h. Using two's complement calculate (-7) + (+4). [3 marks]

SECTION B

Question two (20 marks)

a. Convert the following decimal numbers to the bases indicated
   i. 11.1875 to binary [3 marks]
   ii. 1938 to hexadecimal. [3 marks]

b. Explain five functions of an operating system in a computer system. [10 marks]

c. How many bytes make one Gigabyte (GB). [1 mark]

Question three (20 marks)

a. A computing system is said to be secure if it has confidentiality, integrity and availability. Explain five basic computer security practices. [10 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 various five factors you would consider during purchase [10 marks]

Question four (20 marks)

a. Distinguish the following terms in regard to computer processing.
   i. Multiprogramming [2 marks]
   ii. Multiprocessing [2 marks]
   iii. Multitasking [2 marks]
   iv. Multithreading [2 marks]

b. The main role of the CPU is to execute instructions. Explain four steps involved during the execution of an instruction. [8 marks]

c. Differentiate between off-the-Shelf software and proprietary software. [4 marks]

Question five (20 marks)

a. A bus is group of lines that serves as a connection path for several devices. Explain three main types of system buses. [6 marks]

b. Differentiate between SRAM and DRAM and with reasons state which one is suitable for making cache memory. [4 marks]

c. Explain three kinds of registers found in CPU. [6 marks]

d. Explain two character coding schemes. [4 marks]