CHUKA   **UNIVERSITY**

SUPPLEMENTARY/ SPECIAL EXAMINATIONS

**FIRST YEAR EXAMINATION FOR THE AWARD OF
DIPLOMA IN COMPUTER SCIENCE**

COSC 0101: INTRODUCTION TO COMPUTER SYSTEMS

STREAMS: DIP (COMP SCI) YISI   **TIME: 2 HOURS**

DAY/DATE: WEDNESDAY 03/02/2021   **2.30 PM – 4.30 PM**

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 COMPULSORY (30 MARKS)

a) Explain the following terms as applied in computer systems:
  (i) Computer   [2 marks]
  (ii) Computer network   [2 marks]
  (iii) Software   [2 marks]

(b) Using appropriate examples differentiate between Off-shelf software and Tailor-made software.   [3 marks]

(c) Explain the difference between the following terms.
    i.   System software and application software   [2 marks]
    ii.   Random Access memory and Read Only memory   [2 marks]

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

(e) Why is Konrad Zuse considered to be "Inventor of computers"   [2 marks]

(f) What are the two key operations on memory   [4 marks]

(g) What is the function of Motherboards in contemporary PC systems   [3 marks]

SECTION B (Answer Any Two Questions Only)
Question two (20 marks)

a. List and explain FOUR applications of Embedded systems in society.   (8 marks)

b. What are the four layers of the computer architecture?   [4 marks]

c. List EIGHT components of a modern computer architecture.   [8 marks]

Question three (20 marks)

a) Describe the diverse areas of application of computers and computer systems. [10 Marks]

b) Murithi a student at Chuka university was asked by his lecturer to "identify and classify five types of computers", Explain how he will solve the problem.   [10 marks]

Question four (20 marks)

a) Describe the following terms: (8marks)
   i. Bit
   ii. Byte
   iii. Word
   iv. Nibble

b) Explain the difference between the following terms.
   i.   System software and application software   [2 marks]
   ii. Random Access memory and Read Only memory   [2 marks]

c) Discuss the use of three major components found in CPU   [6 marks]

d) Highlight two major limitations for networking   [2 marks]

Question five (20 marks)

a. Perform the following conversions
   i. 011101111_2 to decimal   [2 marks]
   ii. 1111010101001110_2 to hexadecimal   [2 marks]
   iii. $2AB_{16}$ to binary   [2 marks]
   iv. $2CD_{16}$ to decimal   [2 marks]
   v.   Add binary number 101110 to 111011.   [2 marks]

b. Explain three main types of system buses.   [6 marks]

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