CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATIONS

SECOND YEAR EXAMINATION FOR THE AWARD OF DIPLOMA IN COMPUTER SCIENCE

COSC 0274: EMERGING TECHNOLOGIES IN COMPUTER SCIENCE

STREAMS: DIP. COMPSCI Y2S2   **TIME: 2 HOURS**

DAY/DATE:………………………   **……………………….**

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.
- Marks are awarded for clear and concise answers.

QUESTION ONE (30 Marks)

a. You are working for a cloud computing service provider and have been sent to explain to a client why they should adopt cloud computing. Discuss THREE main areas in which the client will experience the gains of cloud computing technology.   (6 Marks)
b. Define the term Artificial Intelligence and explain TWO importance of using artificial intelligence.   (4 marks)
c. State and explain any THREE cloud computing challenges. (6 marks)
d. Block chain has the potential for revolutionizing business networks, briefly discuss each of the following key concepts of a block chain.   (6 Marks)
   i. Shared Ledger
   ii. Smart Contract
   iii. Consensus
e. State three advantages of using smart phones. (3 marks)
f. Define the term data mining and explain how it works. (5 marks)

SECTION B (Answer any TWO questions)

QUESTION TWO (20 Marks)

a. While providing examples in each, state and explain THREE cloud computing models

(6 Marks)

b. State and explain FOUR benefits of clouding computing.   (8 marks)

b. List any THREE cloud computing providers today together with the service or product they provide   (6 Marks)

QUESTION THREE (20 Marks)
      a. Giving examples, state and explain TWO types of blockchains (8 Marks)
      b. Define the following terms in cybersecurity: (6 marks)
            i. Botnet
           ii. Phishing
         iii. Spamming
      c. Blockchain is the underlying foundation for the Bitcoin cryptocurrency. State and explain THREE advantages of Bitcoin over current transaction systems   (6 Marks)

QUESTION FOUR (20 Marks)

a. Discuss the framework of four common communication models used by IoT devices.

(8 Marks)

b. List and explain any FOUR types of cyber-attacks.   (8 marks)

c. List any two applications of IoT in the world today.   (2 Marks)

d. Explain TWO areas in which artificial Intelligence is being applied in the society today. (2 marks)

QUESTION FIVE (20 Marks)
a. State and explain FOUR areas in which data mining is being used in the society. (8 marks)

b. Explain FOUR facts that shows importance of data mining in the world. (8 marks)

c. List any FOUR certifications a computer science student can pursue towards becoming a professional in cybersecurity   (4 Marks)