

CHUKA UNIVERSITY

COMPUTER SCIENCE

COMP 407: SPECIAL TOPICS IN COMPUTER SCIENCE

**Answer question one and any other two**

Question one : 30 marks

- a) How is Hadoop related to Big Data? Describe its components  
( 4 marks)
- b) Describe at least Five major areas where Big data is being applied  
( 5marks)
- c) Discuss two main Data compression techniques in cloud computing  
(6 marks)
- d) Explain the three Cs of IoT (4 marks)
- e) What is IoT architecture? Explain the basic three IoT architecture layers in details  
(6 marks)
- f) Blockchain has drawn attention as the next-generation financial technology due to its Security that suits the informatization era. Justify the statement and also explain its challenges with appropriate examples.  
(5 marks)

**SECTION B:CHOOSE ANY OTHER TWO**

Question two: 20 marks

- a) Discuss some of the major obstacles blocking the implementation of IoT particularly in the developing countries (4 marks)
- b) How has Technological Standardization so far affecting IoT (5 marks)
- c) Discuss Burrows-Wheeler Algorithm as used in Text compression (6 marks)
- d) Define the term IoT. Elaborate areas where its being applied (5 marks)

Question three: 20 marks

- a) Explain the Top three steps to ensure security in big data environments (9 marks)
- b) What is data munging? explain its purpose (3 marks)
- c) Discuss the main components of IoT architecture.use a diagram to show the relationship and coordination between them.  
(8 marks)

Question four: 20 marks

- a) There are number of security and privacy risks associated with cloud computing. Discuss at least five of them and explain how each must be adequately addressed.(8 marks)
- b) In relation to block Chain explain the following :
- i) Durability
  - ii) Robustness
  - iii) Transpency
  - iv) incorruptible
- (8 marks)
- v) Why is data compression so vital in big data?  
( 4 marks)

Question five: 20 marks

- a) Many problems with current security authentication systems gave a chance for the implementation and use of the Biometric technology.
- i) Explain the problems that were facing the traditional security systems (5 marks)
- ii) Discuss advantages of biometric technology over the traditional security systems (5 marks)
- b) Discuss Minutiae based fingerprint Matching algorithm as used in biometrics (10 marks)