

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) Transparency
 - 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)