

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN APPLIED COMPUTER SCIENCE

ACSC 477: EMERGING TECHNOLOGIES IN APPLIED COMPUTER SCIENCE

STREAMS:

TIME: 2 HOURS

DAY/DATE: WEDNESDAY 18/12/2024

11.30 A.M – 1.30 P.M

INSTRUCTIONS:

Answer question one and any other two

Question one : 30 marks

- a) What is meant by digital forensics ? explain atleast 3 categories of digital forensics (4 marks)
- b) Explain the following terms in relation to Big data :
 - i) Velocity (2 marks)
 - ii) Volume (2 marks)
 - iii) Variety (2marks)
- c) Discuss the characteristics of IoT by citing relevant examples (6 marks)
- d) Explain the three Cs of IoT (4 marks)
- a) A particular bank has branches in the major towns of the Kenya i.e. Nairobi, Nakuru, Meru, Kisumu ,Chuka and Mombassa. Each branch uses a computer for the management of its information, but the branches are not currently linked together. The bank wants to integrate the branches (nodes) using a computer network, and it has two options – to design either;
 - Option 1: A centralized system – all nodes linked to a central node by a computer network.

OR

- Option 2: A distributed system.
- You are required to advise the company's IT director (who is not conversant with distributed systems) about the following;

- (i). Explain to the director three benefits that the users will be expected to observe when the company implements Option2 as compared to Option 1. (3 marks)

(ii). Explain to him a reason as to why the following are more difficult to implement for Option 2 as compared to Option 1.

(i). Naming scheme (ii). Consistency maintenance. (4 marks)

- e) 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. (3 marks)

Question two: 20 marks

- a) Discuss some of the major obstacles blocking the implementation of IoT particularly in the developing countries (6 marks)
- b) How has Technological Standardization so far affecting IoT (5 marks)
- c) Discuss communication protocols as used in IoT (4 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 curation ? Explain its purpose (3 marks)
- c) Explain Software as a Service (SaaS), Infrastructure as a Service (IaaS) and Platform as a Service (PaaS) models of Cloud Computin. (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. (10 marks)
- b) Discuss “internet minute “ in relation to Big data by use of relavant examples. (5 marks)
- c) Why is data compression so vital in big data? (5 marks)

Question five: 20 marks

- a) In relation to block Chain explain the following :

- i) Durability
- ii) Robustness
- iii) Transparency
- iv) incorruptible

(8 marks)

d) What are users' incentives to switch from traditional banking system to public blockchain?

(5 marks)

b) How is Hadoop related to Big Data? Describe its components

(7 marks)
