

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

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

COMP 316: CONTEMPORARY TOPICS IN COMPUTER SCIENCE

STREAMS:

TIME: 2 HOURS

DAY/DATE: FRIDAY 8/12/2017

2.30 P.M – 4.30 P.M

INSTRUCTIONS:

- **ANSWER QUESTION ONE AND ANY OTHER TWO**

QUESTION ONE: 30 MARKS

- a) Explain what problems can happen when there is no concurrency control where multiple transactions are being executed at the same time. (4 marks)
- b) Explain differences and similarities between public cloud, private cloud, and community cloud. (6 marks)
- c) 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 advice the company's IT director (who is not conversant with distributed systems) about the following;

(i). Explain to the director FOUR benefits that the users will be expected to observe when the company implements Option2 as compared to Option 1. (4 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)

d) Explain the difference between Digital and cloud forensics. (4 marks)

e) Discuss in detail the architecture of Grid Computing systems. (6 marks)

f)What is cluster computing? Give examples (2 marks)

QUESTION TWO: 20 MARKS

a) Explain the following in details giving example in each case: (9 marks)

- i) Network Forensics
- ii) Forensic data analysis
- iii) Mobile device forensic

b) Discuss the Digital Investigation Process Mode (DIPM) (7 marks)

c) Explain reasons for distribution in a distributed system. (4 marks)

QUESTION THREE: 20 MARKS

a) Dependability is an important challenge in designing and building Distributed systems. Define Dependability and explain its major properties. (8 marks)

b) Discuss the major trends in computing that have led to the emergence of Cluster computing. (9 marks)

c) Explain advantages and disadvantages of cloud computing. (3 marks)

QUESTION FOUR: 20 MARKS

a) Why is Digital Crime Scene Preservation and Documentation phase very important in achieving successful digital investigation (4 marks)

b) Explain how cluster computing will achieve the following :- (12 marks)

- i) High- performance

- ii) High- availability
- iii) High- throughput processing
- c) What is a distributed system? Give examples. (4 marks)

QUESTION FIVE: 20 MARKS

- a) Compare and contrast cloud computing with more traditional client-server computing?
What is novel about cloud computing as a concept? (8 marks)
 - b) Why does naming systems play an important role in a distributed environment?(4 marks)
 - c) What are Client and Server Stubs and how are they used in remote Procedure calls?
(4 marks)
 - d) Briefly explain the differences and similarities between grid computing, cloud
computing (4 marks)
-