



THE CO-OPERATIVE UNIVERSITY OF KENYA

END OF SEMESTER EXAMINATION DECEMBER -2022

**EXAMINATION FOR THE DEGREE OF BACHELOR OF INFORMATION
TECHNOLOGY, BUSINESS INFORMATION TECHNOLOGY
(YR IV SEM I/YR III SEM I)**

UNIT CODE: BCIT 4141/BCSC 3113

UNIT TITLE: CLOUD COMPUTING/CLOUD SERVICES AND ANALYTICS

DATE: THURSDAY, 15TH DECEMBER, 2022

TIME: 9:00 AM – 11:00 AM

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INSTRUCTIONS:

- **Answer question ONE (compulsory) and any other TWO questions**

QUESTION ONE

- (a) Scalability and Elasticity are important properties of cloud computing. Discuss two ways in which you can achieve this. (4 marks)
- (b) Public Cloud model is a Cloud infrastructure that is available to the general public and is owned by an organisation selling cloud services.
- Discuss any four basic characteristics of public cloud deployment model (6 marks)
 - Differentiate this Cloud deployment model with private cloud (5 marks)
 - Discuss a situation in which you would adopt hybrid cloud deployment model. (5 marks)
- (c) What is distributed computing? How has it contributed to the advancement of Cloud Computing technology? (5 marks)
- (d) What are some of the risks multi-tenancy would bring in respect to various cloud environments? (5 marks)

QUESTION TWO

- (a) Discuss three ways in which you can achieve fault tolerance in cloud computing (8 marks)
- (b) Encryption can be used in encrypting data both in-transit and at-rest on Cloud computing environment. Discuss how these can be achieved (8 marks)
- (c) List any four Security challenges in SAAS service model adoption (4 marks)

QUESTION THREE

- (a) One of the enabling techniques of IaaS is virtualization. There are several types of virtualization commonly used in cloud computing environment. Discuss these three with examples. (6 Marks)
- (b) Vendor lock-in is serious concern in cloud computing migration. Explain three measures you employ to mitigate the effects of this cloud computing service risk. (6 Marks)

- (c) Distributed computing has been described as having played a vital role in making on what cloud computing is today. Discuss. (6 marks)
- (d) Give any two characteristics of distributed computing. (2 marks)

QUESTION FOUR

- (a) What is Runtime Environment Design in Platform as a Service? Discuss the common cloud computing properties in Runtime environment. (6 marks)
- (b) Identity and access management is an important aspect in any cloud computing. AWS is no different in the secure control and access to AWS services and resources. Discuss Authenticate, Authorise and Audit in respect to this. (6 marks)
- (c) Explain any four essential cloud characteristics (4 marks)
- (d) Service Level Agreement is very important in Cloud computing as one of the central ideas surrounding the cloud computing technology. Explain why it is important. (4 marks)

QUESTION FIVE

- (a) From the very beginning of the cloud computing era, security has been the biggest concern among enterprises considering the public cloud as the cloud security is constantly changing. Despite this, organisations need to maintain the cloud security best practices to ensure that sensitive applications and data don't fall into the wrong hands. Briefly discuss any four of these best practices. (8 marks)
- (b) Cloud Computing security is a shared responsibility. Each party must understand its role in ensuring securing of cloud service. In a IAAS service model, explain any three shared responsibilities for each (CSP and the customer). (6 marks)
- (c) Discuss how Disaster recovery is a critical mechanism in achieving system resilience in cloud computing systems. Discuss. (6 Marks)