University of Ruhuna- Faculty of Technology
Bachelor of Information and Communication Technology Degree
Level 4 (Semester 1) Examination, December 2020

Course Unit: ICT4123- Cloud Computing (Theory)   Time Allowed: **2 hours**

Answer all **four (04)** questions

This question paper contains **03 pages**.

Question 1

a. Define cloud Computing.   (20 marks)

b. Distinguish between private cloud and public cloud.   (20 marks)

c.

   i.   Explain cloud service models with a suitable example.   (15 marks)
   ii. Assign these cloud service offerings to the service models.   (15 marks)
   - Google App Engine
   - Google Cloud Print
   - Sales force
   - Amazon Elastic Compute Cloud
   - Amazon Mechanical Turk
   - GoGrid
   - EC2 Cluster Compute Instances
   - Google Apps
   - Aneka
   - Amazon Simple Storage Service
   - Microsoft Azure
   - Microsoft Office 365
   - AWS Elastic Beanstalk

d. "While cost and ease of use are two great benefits of cloud computing, there are significant security concerns and risks that need to be addressed when considering moving critical applications and sensitive data to public and shared cloud environments.". Do you agree with this statement?   (30 marks)

Question 2

  a.

      i.   List down two differences between traditional Computer and Virtual Machine.

                (10 marks)

      ii.   Mention three advantages of Virtualization.   (15 marks)

  b. Multitenancy enables sharing of resources and costs among large pool of users. Discuss three benefits of multitenancy.   (15 marks)

  c. Live migration can be defined as the movement of a virtual machine from one physical host to another while being powered on. Briefly explain the stages of live migration process.   (30 marks)

  d. Briefly explain the following concepts.
      i.   Hypervisor   (10 marks)
      ii.   Multitenancy   (10 marks)
      iii.   Docker   (10 marks)

Question 3

  a. Briefly explain the cloud load balancing with the aid of a diagram.   (20 marks)

  b. List down four major points that you would consider in assessing an SLA(Service Level Agreement) for a cloud service.   (20 marks)

  c. Load balancing algorithms are classified into two categories. Briefly explain with two examples for each.   (30 marks)

  d. Elaborate on "the advantages of Simple data backup as well as more comprehensive disaster recovery and business continuity planning as an essential part of business and personal life on cloud computing."   (30 marks)

Question 4

Wadula Gardens Ltd is a company that runs a few related gardening enterprises. These enterprises include the Wadula Gardens Nursery which sells plants and garden supplies to the public, and Regional Garden Planners which provides garden advice, design, and consultancy services. Regional Gardens Ltd has a small data center at its main site in Maharagama where the company's servers and data storage are located. This infrastructure has not been updated for some time and the Wadula Gardens Board is concerned that a full upgrade may now cost them more than it is worth. The Board is now considering moving some, or all, of their current infrastructure into the Cloud.

Regional Gardens is considering the following strategic proposal:

- They want to keep their client data secure, so they plan to continue to keep their data on their own servers
- This would require updating their data storage infrastructure in the Maharagama data center and moving all other infrastructure into the Cloud.
- They plan to change their current web software architecture to take advantage of the flexibility and scalability that can be gained by moving to a Microservices model.
- They also plan to migrate their Garden Design LoB (Line of Business) applications to the cloud to increase the application's flexibility and availability.

The Board also expects to achieve significant savings by migrating to a Cloud based ICT infrastructure. They appreciate that this would involve training for:

- Their existing ICT staff so that they can manage the new Cloud based infrastructure,
- Their development staff so that they can start to develop using a Microservices model.

Answer the following questions considering the above scenario.

a. State the suitable enterprise migration consumption strategy for the above scenario.

(20 marks)

b. Explain four steps of migration process of the above organization. (40 marks)

c. Briefly explain how you can manage the change for the staff using Lewin's Change Management Model. (40 marks)

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