



(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS 2020/2021 ACADEMIC YEAR

END OF SEMESTER EXAMINATIONS YEAR FOUR SEMESTER TWO EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF SCIENCE COMPUTER SCIENCE

COURSE CODE : CSC 466E

COURSE TITLE : CLOUD COMPUTING

DATE: 30/09/2021 TIME: 09:00 A.M – 11:00 A.M

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE [COMPULSORY] [30 MARKS]

You have just been appointed as an ICT Director of ABC Company one of the leading Automobile company in Kenya. Having reported and worked for a month you realized that things were not running well in the company and so you initiated a meeting for your state of art. During the meeting the following issues were raised: (1) Security of the organizational data, sharing or access to business information outside the organization was a challenge, (2) Sub – branch managers also complained of having little information about what is happening in other branches, (3) It was also noted in the meeting that organization has replicated hardware, software and common data to all 15 branches and updating the infrastructure and data was becoming expensive and at times some branches end up having inconsistent information or data hence affecting their operation and decision making process, (4) Database administrator pointed out that he was not able to assign roles since the information is replicated everywhere on physical or terminal computers and unregulated from the main office and (5) the marketing department personnel pointed out that the department has incurred much cost on travelling around providing information to clients of which some of the clients resides outside country. Most of the approaches they are using they are not working well as some clients are well informed with information from other well automated competitors.

As someone who is experienced in computing field you feel like you can provide many solutions, a quick one being Cloud Computing technology.

- a. Explain the concept of cloud and cloud computing to the members of the meeting. **[3 marks]**
- b. Describe the characteristics of cloud computing environments that will be utilized in case the Company goes the cloud way. **[5 marks]**
- c. Explain the keys steps you will focus on as a director in implementing Cloud computing based applications and services. **[5 marks]**
- d. Explain to members the various key enablers of technologies in cloud computing systems and the IT giants in cloud computing. **[5 marks]**
- e. Elaborate on public, private, hybrid and community cloud models and give a suggestion how you will adopt these models or reject some in the implementation process based on their vulnerability aspects. **[6 marks]**
- f. Explain the concepts market based management of clouds to sales and marketing department in details pointing out how it solve their numerous problems. **[6 marks]**

QUESTION TWO [20 MARKS]

- a. What is third party cloud services? Give some examples of a third party cloud services. [4 marks]
- b. "Data produced by a large Hadron Collider may exceed several petabytes". What type of grid service model(s) will you suggest for such an application? **Illustrate** with diagrams. [7 marks]
- c. Analyze each of the following service models and how an organization can benefit when upon commissioned :
- i. Infrastructure as a service [3 marks]
 - ii. Platform as a service [3 marks]
 - iii. Software as a service [3 marks]

QUESTION THREE [20 MARKS]

- a. Explain key enabling technologies in cloud computing systems. [4 marks]
- b. Explain the meaning of service oriented architecture (SOA) and how you will use it support cloud computing Services in the firm. [4 marks]
- c. Discuss the roles of virtual machine and virtualization middleware and hypervisors in network based system to various IT sub-managers. [6 marks]
- d. Describe three desired features of a cloud [6 marks]

QUESTION FOUR [20 MARKS]

- a. Explain how migration of Grid Services are Handled. [4 marks]
- b. Describe three advantages of using private cloud [6 marks]
- c. Explain the services provided by Amazon infrastructure cloud from user perspective. [6 marks]
- d. What do you understand by cloud analytics? Explain also describe how it works. [4 marks]

QUESTION FIVE [20 MARKS]

As a senior technologist, you have noticed a number of issues that lead to failure of laptop project in Kenyan primary schools. Some of them relates directly to safety of the children while using IT gadgets -among other effects- that we can group them as Green ICT practices. The second concern being the human resource in managing the ICT in primary school as most of teachers trained are not competent enough to sustain the laptop project through repair and upgrades. The last concern being the curriculum and security of the gadgets. Any change in curriculum means update to all devices in the whole country manual and still children are unable to use the devices at their homes. You felt like you can recommend to the deployment team on the values of technologies available so as to reduce cost of operation and sustain the project.

- a. Explain to them server Virtualization? With example on how it can address curriculum problems. [4 marks]
- b. List the major features of Google App Engine. Which kind of problems can be solved using Google App Engine? [4 marks]
- c. How testing under cloud can be performed? Explain it by taking service based models of cloud computing under consideration. [6 marks]
- d. **Assess** in detail the Cloud Infrastructure Security at Network, Host and application Level by discussing their pros and cons to the team. [6 marks]