CERTIFIED PUBLIC ACCOUNTANT

FOUNDATION LEVEL 2 EXAMINATIONS

<u>F2.3: INFORMATION SYSTEMS</u>

DATE: TUESDAY, 26 JULY 2022

<u>**INSTRUCTIONS:**</u>

1. **Time Allowed: 3 hours 15 minutes** (15 minutes reading and 3 hours writing).

2. This examination has **seven** questions and only **FIVE** questions **should be** attempted.

3. Marks allocated to each question are shown at the end of the question.

4. The question paper should not be taken out of the examination room.

QUESTION ONE

John is an information systems developer who works for Anaconda Company. He has developed a patient App which helps patients to keep track of patient information, patient transfer, medical prescription and doctor's appointment.

John and the company have full access to the patient information including the schedule for doctor's appointment and lab swabs. Hence Patient information is stored on the application.

The company Manager requests John to supply them with customer-specific information so that they can target advert and application recommendations to the users. John understands that he is part of a company, but he is also responsible for user's privacy. Therefore, John as a developer, should be responsible to those who use his technology.

Concerning the security of the system. The early simulation showed that under certain conditions the software would cause the crash of computer. John repaired the software and system passed all simulation tests, However, John as an engineer is convinced that redesign of the system would secure the system, but it would delay the deployment of the application. Yet his supervisors are telling him to sign off the system even if it has minor problems otherwise, he is going to lose his job.

Required:

a) **Clarify any three Ethical principles useful for decision making about Supplying customer-specific information.** (6 Marks)

b) **Explain one general control principle to consider in this case study regarding computer systems.** (2 Marks)

c) **Specify four Causes of System Quality Problems**. (2 Marks)

d) **Describe three risk mitigation strategies that Anaconda Company could adopt.** (6 Marks)

e) **Briefly describe the effect of errors on patient App systems.** (4 Marks)

(Total: 20 Marks)

QUESTION TWO

Nyagatare Hospital is proposing to develop a database system that manages its employee's data. Below is the employee database structure:

- Employee Table: Emp_id, Emp_Name, Department, Contact No, Email_ Id, Emp_ Head Id
- Emp Dept Table: Dept_Id, Dept_ Name, Dept_off, Dep_tHead
- Emp Salary Table: Emp_Id, Salary, Is_Permanent.

Required:

a) **Describe the following terms used in designing Nyagatare Hospital database structure**
i. **Key fields** (2 Marks)
ii. **Relational Database** (2 Marks)
b) **Discuss three problems with the traditional file environment.** (6 Marks)
c) **Explain the following benefits that Nyagatare Hospital can gain from investing in information**
i. **Tangible benefits.** (2 Marks)
ii. **Intangible benefits.** (2 Marks)
d) **Specify three system changeover methods that can be applied in Nyagatare Hospital.**
(6 Marks)
(Total: 20 Marks)

QUESTION THREE

Computech is a Company investing in offering Computer systems for sharing of data in real-time by delivering information systems integration services. Computer network is a system of interconnected computers aiming at sharing digital information. Communication network is the transmission of a signal by way of a medium from a sender to a receiver. Network are classified by their scale, according to the order of scale, Local Area Network, Metropolitan Area Network. Wide Area Network and Internet. Therefore, they use various types of physical transmission and Wireless Transmission Media to carry messages from one device to another.

Required:

a) **Distinguish between Metropolitan Area Network and Wide Area Network.** (4 Marks)
b) **Discuss Centralised and Distributed Processing.** (4 Marks)
c) **Describe three Wireless Transmission Media to carry messages from one device to another**. (3 Marks)
d) **Explain the basic function of a telecommunications networks.** (2 Marks)
e) **Define computer systems integration services.** (1 Mark)
f) **Clarify the 3 primary strategic business objectives that pushed Computech to invest in information Systems.** (6 Marks)
(Total: 20 Marks)

QUESTION FOUR

Digit hub is proposing to set up an environment which should be equipped with computers that will help engineers to develop software that the government of Rwanda or any other private institution will use to solve various problems in various sectors at large. Hence for the environment to be ready to operate the binary hub should first put into consideration the feasibility of IT Infrastructure, types of computers to use and the levels of IT infrastructure related to the Management of IT infrastructure. Digit hub is proposing to store all the data on a cloud instead of having a physical storage

Required:
a)
i.   **Briefly define a microprocessor.** (1 Mark)
ii. **Clarify two basic components of microprocessor.** (2 Marks)
b) **Distinguish storage from Memory, and give two examples of each.** (4 Marks)
c) **Explain the following:**

i.   **Cloud computing.** (2 Marks)
ii. **Five disadvantages associated with cloud computing.** (5 Marks)
d) **Explain three major levels of IT infrastructure.** (6 Marks)

(Total: 20 Marks)

QUESTION FIVE

Digital tech company has developed Mwisoko App for mobile commerce used for selling and buying agricultural products over the internet, it was developed to help farmers in rural areas targeting especially cooperatives. It will link farmers, shops, and clients without traveling for a long distance or even physically searching for customers or products. All payments in this mobile commerce require special digital payment systems based on the type of transaction that is taking place using cell phones and other small handheld devices.

Required:

a) **Briefly discuss three ways on how the Internet is changing the way Digital tech company do business**. (6 Marks)
b) **Explain E-business.** (2 Marks)
c) **Distinguish intranet from extranet.** (2 Marks)
d) **Describe two Mobile-Commerce Challenges.** (4 Marks)
e) **Clarify three digital payment systems required for Mwisoko App.** (6 Marks)

(Total: 20 Marks)

QUESTION SIX

An academic officer at kigoma University left the laptop in the office without locking the door and went to the neighboring office to pick some papers for printing university student transcripts. The laptop had access over 50000 student's marks records. The student entered into the office stole the computer. The laptop was protected with password protection and security tools. But the data on the hard disk was not encrypted.

Required:

a) **Describe three business values of security and control regarding physical theft of an unencrypted device.** (6 Marks)
b) **Specify 4 principal general controls for computer systems.** (8 Marks)
c) **Clarify disaster recovery planning.** (2 Marks)
d) **Explain Business Process Reengineering.** (2 Marks)
e) **Briefly discuss tools and techniques that can help Kigoma University protect against or monitor intrusions.** (2 Marks)

(Total: 20 Marks)

QUESTION SEVEN

The University of Kabuye is using database systems to manage courses with its allocated classrooms. Therefore, students and staff will not waste time searching for classrooms physically moving from one room to another but also it helps in the management of rooms depending on the number of students each class holds. Creating a database environment is a long-term endeavour that requires significant investments and organizational change. Below is the database structure of course management systems.

SCHOOL: School Id, School Name, Description
DEPARTMENT: Department Id, Department Name, Description
COURSE: Course Id, Course Name, Description, School Id.
CLASS: Class Id, Class Name.
ROOM: Room Id, Room Name

Required:

a) **Discuss any 3 requirements for developing Course database systems environment.** (6 Marks)
b) **Describe Object-oriented Database; give one advantage and one disadvantage.** (3 Marks)
c) **Explain Decision support systems**. (4 Marks)
d) **Clarify two design stages used in database creation.** (4 Marks)
e) **Specify why businesses use the databases**. (3 Marks)

(Total: 20 Marks)

End of question paper.

BLANK PAGE

BLANK PAGE

BLANK PAGE