



**ICPAR**  
Unlimited possibilities

**CERTIFIED PUBLIC ACCOUNTANT  
FOUNDATION LEVEL 2 EXAMINATIONS**

**F2.3: INFORMATION SYSTEMS**

**DATE: TUESDAY, 29 MARCH 2022**

**INSTRUCTIONS:**

- 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. Show all your workings where necessary.**
- 5. The question paper should not be taken out of the examination room.**

## QUESTION ONE

As you may already be aware of, computer does what it is instructed to do. Without human intervention, a computer cannot do anything on its own. If you mislead a computer with wrong information, it will also output wrong information. The user will instruct a computer on what to do, how it can do it and the time to do it. A set of sequential instructions are given to the computer and these sets of instructions are called Programs. Thus software means a set of programs that are supposed to make the hardware work on a set of tasks in some order. System software therefore is a set of the programs, which are in charge of running the computer, controlling its operations. Operating system is categorized under system software. Computers are connected together with other devices to form a network.

### Required:

- (a) Briefly discuss Storage area networks. (2 Marks)
- (b) Describe operating systems and give one reason why Linux is the most preferred operating system. (2 Marks)
- (c) Give 6 examples of operating systems. (6 Marks)
- (d) Briefly discuss Extensible Business Reporting Language (XBRL) (2 Marks)
- (e) Outline the 3 major benefits of XBRL. (3 Marks)
- (f) Outline at least 5 Contemporary software platform trends. (5 Marks)

(Total: 20 Marks)

## QUESTION TWO

Information systems are now changing businesses in many ways than it was in the past years. These information systems have reduced the cost of getting and sharing information nowadays than ever before. Internet together with the information systems made this possible even though it looked like impossible at the beginning. Senior staff can easily monitor how the junior staff is working. Information is easily fetched and thus helps in decision making process. Many tasks are performed in a shorter time and by few staff which leads to cost reduction. With information systems and internet, products are ordered online and they are delivered in a short time. Business processes have been shortened yet achieving the same goal. Organizations are flexible due to the introduction of information systems.

### Required:

- (a) Briefly discuss the relationship between organizations, information systems and business processes as used in the above text. (6 Marks)
- (b) Identify five key management challenges encountered while building, operating and maintaining information systems (10 Marks)
- (c) In few words, discuss three Information System Strategies for dealing with Competitive Forces (3 Marks)
- (d) What is the difference between Data and Information? (1 Marks)

(Total: 20 Marks)



### QUESTION THREE

International fast food (IFF) company is among the worlds' leading restaurant with fast food such as chicken wings, hamburger and many other fast food. IFF recently opened a branch in Rwanda. Many people in the country were anxious to see that fast food restaurants which was already operating in other countries. IFF serves a big number of people worldwide with its' delicious food. Children really love this fast food and not forgetting adults too. The source of fast food companies' main products come from wheat, chicken, potatoes, fruits and vegetables. Therefore, they need to have a very tight connection with farmers who supply them with those needed materials.

IFF provides has menu order, contact about their address and Reserve facility which allows customers to view the food and the food prices, book items in advances and also make orders online.

#### Required:

- (a) Define the following terms:
  - (i) E-commerce (2 Marks)
  - (ii) Digital markets (2 Marks)
  - (iii) Social media (2 Marks)
  - (iv) Digital goods (2 Marks)
- (b) Differentiate Internet Technology and the Digital Firm (4 Marks)
- (c) Business firms invest in information systems such as the one for IFF to accomplish eight primary strategic business objectives. Outline those objectives. (8 Marks)

(Total: 20 Marks)

### QUESTION FOUR

Kira is a hospital in Kigali where many patients go for consultations. Kira has different staff members working there. Each staff member has a different task to play as mentioned below:

The hospital manager keeps records of all staff; Doctors (doctor No, Name, Specialty), nurses (nurse No, Name) in the system. In this hospital, patients come for treatment, at the reception they have to be registered by the receptionist who records their personal information such as the patient name, date of birth (DoB), gender, address and they get the patient identifier (patient number). Patients are treated by doctors who prescribe medical tests such as Blood, urine, X-RAY and prescribe medications (name, quantity) to patients.

Patients are assigned to a ward (identified by a ward name which is unique across the hospital) by the receptionist. Wards contain many beds (identified by a number) occupied by patients. Bills are generated by receptionist by recording price for each facility provided to Patient.

The biggest worry that many patients are having is that their health data is exposed in Kira and many other hospitals that uses their information while predicting health issues. The

patients are also worried of their exposed data which can be fabricated or stolen by hackers and later used against them.

**Required:**

- (a) **Define Access control** (1 Marks)
- (b) **Outline two important elements of risk analysis.** (2 Marks)
- (c) **Discuss 6 categories of assets that may need to be assessed in Kira hospital.** (6 Marks)
- (d) **Explain 6 reasons why Computer based systems tend to be more vulnerable to damage, error, and fraud than manual systems following what Kira hospital is using as information system to manage their patients.** (6 Marks)
- (e) **Explain at least 5 principal general controls for safeguarding information resources in Kira.** (5 Marks)

**(Total: 20 Marks)**

**QUESTION FIVE**

University of Rusizi has a library; their library database has to keep information about their students, their workers, the physical locations of their branches, and also their books and videos. The library must keep track of the status of each book or video: its location, status, descriptive attributes, and cost for losses and late returns. Each book will be identified by its serial number, title and year. In order to allow multiple copies of the same book each book will have a unique ID number.

Librarian at University of Rusizi registers a new student by recording her name, address, phone number, and date of birth. Librarian provides them a library card. They will then be given a unique user name and ID number, plus a temporary password that will have to be changed. Checkout operations will require a library card, as will requests to put media on hold. Each library card will have its own fines, but active fines on any of a customer's cards will prevent the customer from using the library's services.

The library will have branches in various physical locations. Branches will be identified by name, and each branch will have an address and a phone number associated with it. Additionally, a library branch will store media and have employees.

Employees will work at a specific branch of the library. They can also have library cards; therefore, the same information that is collected about customers should be collected about employees.

**Required:**

- (a) **Building new systems in organization can enable four kinds of organizational change. Briefly discuss the four kinds of organizational change.** (4 Marks)
- (b) **Outline at least four set of activities that are involved in producing an information system.** (4 Marks)
- (c) **Discuss 5 Alternative methods for building information systems.** (10 Marks)



**(d) Outline four steps involved in prototyping process** (2 Marks)

**(Total: 20 Marks)**

### QUESTION SIX

Ururabyo Telecom is a Telecommunication company operating in Rwanda. All the other Telecommunication companies in Rwanda and beyond have joined developed a very complex platform for cross-border mobile money transfer (CBMMP). At the completion of the platform, they have published their software requirements specification (SRS) document. Now Ururabyo Telecom wants to join that complex CBMMP platform and has employed 5 software developers to develop an internal module which communicates with the CBMMP. However, since the SRS document is published, the developers are not supposed to be given training and budget for the feasibility study. They signed the contract and are ready to start the development. The manager of those employed developers called you as a software engineer asking you to advise him on how to go through the development of that internal module.

**Required:**

**(a) Outline 6 limitations of e-commerce** (6 Marks)

**(b) Management information systems have ethical and social concerns. Discuss the five moral dimensions of these issues.** (10 Marks)

**(c) Briefly discuss the Information Rights Privacy as Ururabyo Telecom will be dealing with more information which also involves money transfer.** (2 Marks)

**(d) How can Laws and privacy legislation help to protect the privacy of Internet users?** (2 Marks)

**(Total: 20 Marks)**

### QUESTION SEVEN

Digital data are nowadays put together and in strange scales and also in many formats in different domains such as e-commerce, social networks, sensor networks, astronomy, genomics, medical records, etc. This became possible by the extra ordinary growth of the last years of the capacity of data storage tools and cloud storage. These days we have more data from different resources. Useful data is too small and hidden within that big data, this lead to the introduction of Data mining so that the small meaningful data may be extracted and used in decision making. Data mining is a way of extracting useful knowledge from a pool of big data in order to see patterns in data and hence get insights from data for decision making in Companies. Knowledge is what is needed from that pool of data which is a mixture of useful and non-useful information.

**Required:**

**(a) The knowledge management cycle includes four main steps that transform data and information. Discuss the four steps in details.** (8 Marks)

**(b) Why is knowledge from external sources important to organizations?** (2 Marks)

**(c) Briefly define the below terms used in information systems:**

**(i) Knowledge Based Systems.**

**(2 Marks)**

**(ii) Remote working**

**(2 Marks)**

**(iii) Hot desking**

**(2 Marks)**

**(d) List down at least 4 ways of managing knowledge.**

**(4 Marks)**

**(Total: 20 Marks)**

**End of the question paper**



