



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**
Faculty of Computing and Informatics

Department of Informatics

QUALIFICATION : POSTGRADUATE CERTIFICATE IN INFORMATICS (INFORMATION SYSTEMS AUDIT)	
QUALIFICATION CODE: 08PGCI	LEVEL: 8
COURSE: ACCOUNTING INFORMATION SYSTEMS	COURSE CODE: AIS822S
DATE: NOVEMBER 2019	SESSION: 1
DURATION: 3 Hours	MARKS: 100

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Mr Munyaradzi Maravanyika
MODERATOR:	Ms Valerie Garises

INSTRUCTIONS
<ol style="list-style-type: none">1. Answer ALL the questions.2. Write clearly and neatly.3. Number the answers clearly.4. Do not use additional materials5. Cross out any work which should not be marked.6. No pencil work allowed except for diagrams where requested.

THIS QUESTION PAPER CONSISTS OF 3 PAGES
(Excluding this front page)

Case Scenario

Read the following case carefully and use it to answer Section A of this paper.

Ruacana Medical Supplies is a partnership of 6 paediatrician owners, 2 nurse practitioners, 10 nurses, 3 accounting clerks, 2 receptionists, and an office manager. The office manager and all the accounting clerks have their own PCs, and the receptionists share a PC. These PCs are connected through a local area network. They are password protected, and the managing partner keeps a record of all passwords. The practice uses a standard medical-services software package that cannot be modified.

Most patients receive medical attention after insurance coverage has been verified by the office manager. Upon entering the medical office, the patient presents proof of insurance to a receptionist. The insurance documentation is photocopied and immediately forwarded to the office manager for verification (while the patient is in the waiting room). In some situations, the office manager may extend credit based on special circumstances. Approximately 20 percent of the patients pay for services with cash or check at the time of the appointment.

The attending physician must prepare a prenumbered service report at the time services are rendered to patients. Completed service reports are immediately forwarded to the first accounting clerk, who updates the report with pricing information. One copy of this report is given to the patient, and the second accounting clerk retains other copy. Depending upon the patient's form of payment, the second accounting clerk will perform one of the following for each service report:

- **File an insurance claim and record the related insurance company receivable for any reports that are signed by the office manager as a verification of the patient's insurance coverage.**
- **Record a patient receivable for any reports that are designated by the office manager as approved credit.**
- **Receive the cash or check from the patient and record the related cash collection in a cash receipts listing.**

The second accounting clerk prepares a daily summary of patient revenues. The first accounting clerk opens the mail each day and handles insurance company correspondences. When collections are received in the mail from insurance companies and patients, they are forwarded to the second accounting clerk for deposit.

The second clerk stamps each check "For Deposit Only" and prepares a daily cash receipts listing (which also includes collections from patients who received services that day). One copy of this list is retained, and a copy is sent to the third accounting clerk. The third clerk prepares the daily bank deposit slip and retains a copy in a chronological file. This clerk also handles patient correspondences and scheduling and maintains a list of patients whose insurance coverage has been approved by the office manager.

When patient accounts are not collected within 60 days, the second clerk notifies the office manager, who analyses the reasons for all instance of non-payment. When the insurance company rejects the claim, the office manager reclassifies the receivable from an insurance account to a patient account. The second clerk adjusts the insurance company and patient account files for reclassifications and write-offs. This clerk maintains a listing of patients with uncollectible balances and provides an updated copy each week to the third clerk, who will not allow patients with this status to schedule new appointments.

SECTION A: CASE STUDY QUESTIONS**[70 MARKS]****Question 1****[10 marks]**

Prepare a process diagram of the third paragraph of Ruacana Medical Supplies processes (The one in bold).

Question 2**[5 marks]**

You have been given the task to design new customer account numbers that will be used by Ruacana Medical Supplies' accounting system. Use a group coding scheme to design the customer number and explain the advantage a group coding scheme would give you.

Question 3**[15 marks]**

A recent audit of Ruacana Medical Supplies has discovered elements of internal computer fraud within the organisation. Internal computer fraud concerns each of the following activities:

- a. Input manipulation
- b. Program manipulation
- c. Output manipulation

Discuss the concept of internal computer fraud and discuss how internal computer fraud may be perpetrated in Ruacana Medical Supplies using the three techniques outlined above.

Question 4**[10 marks]**

The fraud triangle consists of three factors that contribute to or are associated with management and employee fraud. These factors are situational pressure, opportunity and ethics.

Apply the fraud triangle to explain how an employee of Ruacana Medical Supplies may be forced to engage in fraudulent activities.

Question 5**[30 marks]**

Based on the Ruacana Medical Supplies case study, evaluate the information in each of the following situations as being either an internal control strength or weakness. Justify your answer.

- a. Ruacana Paediatrics' office manager approves the extension of credit to patients and authorizes write - offs of uncollectible accounts.
- b. Ruacana Paediatrics' office manager may extend credit based on special circumstances rather than using a formal credit search and established credit limits.
- c. Ruacana Paediatrics extends credit rather than requiring cash or insurance in all cases.
- d. The employees of the practice cannot modify the computer software package.
- e. None of the employees who generate revenues or record revenues can write cheques.
- f. Computer passwords are known only by the individual employees and the managing partner, who has no record - keeping responsibilities.
- g. Individual paediatricians document the services they perform on pre - numbered reports that are used for both recording revenues and patient receipts.
- h. Insurance coverage is verified by the office manager before medical services are rendered.
- i. An independent CPA firm prepares the bank reconciliation.
- j. The sequence of prenumbered service reports is accounted for monthly by an independent CPA firm.

SECTION B: STRUCTURED QUESTIONS**[30 MARKS]****Question 6****[10 marks]**

A purchasing agent for a home improvement centre is also part owner in a wholesale timber company. The agent has sole discretion in selecting suppliers for the timber sold through the centre. The agent directs a disproportionate number of purchase orders to his company, which charges above-market prices for its products. The agent's financial interest in the supplier is unknown to his employer.

What type of fraud is this and what controls can be implemented to prevent or detect the fraud?

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Kruger Designs hired a consulting firm 3 months ago to redesign the information system that the architects use. The architects will be able to use state-of-the-art computer-aided design (CAD) programs to help in designing the products. Further, they will be able to store these designs on a network server where they and other architects may be able to call them back up for future designs with similar components. The consulting firm has been instructed to develop the system without disrupting the architects. In fact, top management believes that the best route is to develop the system and then to introduce it to the architects during a training session. Management does not want the architects to spend precious billable hours guessing about the new system or putting work off until the new system is working. Thus, the consultants are operating in a back room under a shroud of secrecy.

Discuss whether management is taking the best course of action for the announcement of the new system and whether you approve of the development process. Provide the appropriate justification for your argument.

End of question paper



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PERMISSIBLE MATERIALS

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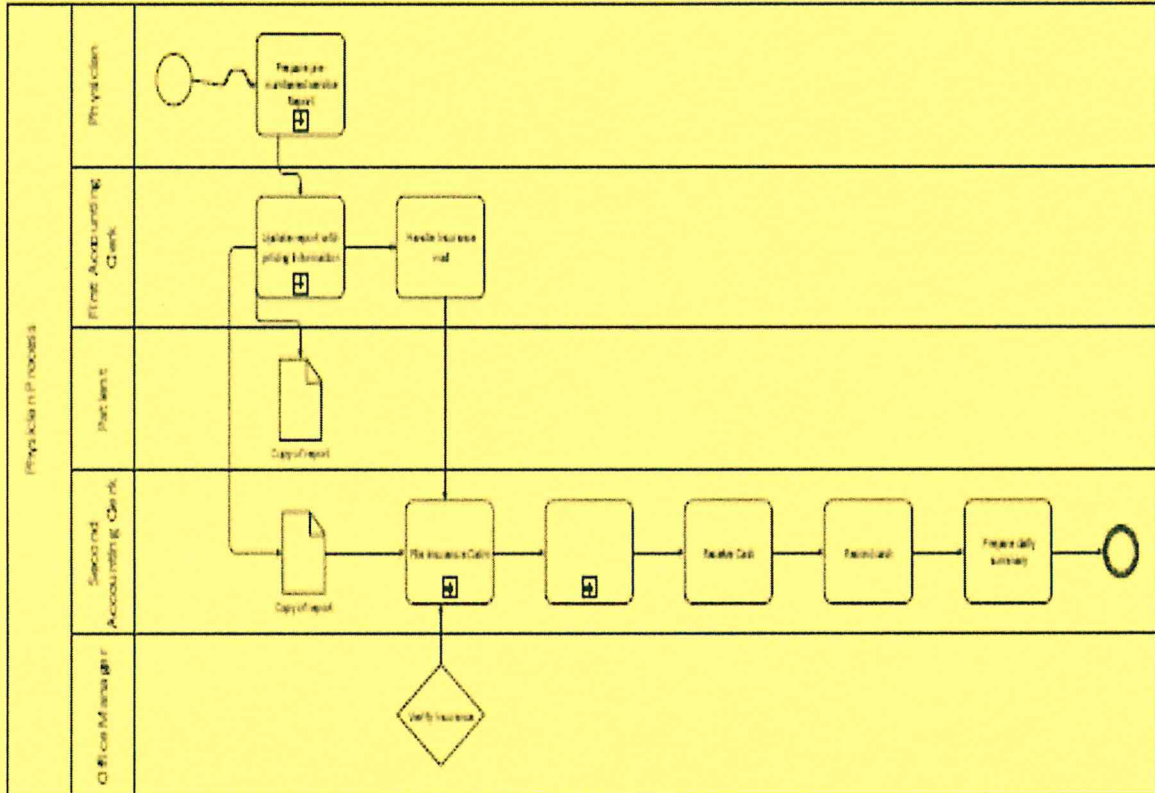
SECTION A: CASE STUDY QUESTIONS

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Solution

- Group codes - Two or more subgroups of digits that are used to code an item.
- A group code is often used in conjunction with a block code.

Example:

- There are four sub-codes in the product code, each with a different meaning.
- Users can sort, summarize, and retrieve information using one or more sub-codes.
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Solution

Input manipulation usually involves altering data that is input into the computer.

- For example, altering payroll timecards to be entered into a computerized payroll system is a type of input manipulation.
- Other examples of input manipulation would be creating false or fictitious data inputs, entering data without source documents, or altering payee addresses of vendors or employees.

Program manipulation occurs when a program is altered in some fashion to commit a fraud.

- Examples of program manipulation include the salami technique, Trojan horse programs, and trap door alterations.
- A fraudster may use the salami technique to alter a program to slice a small amount from several accounts and then credit those small amounts to the perpetrator's benefit.
- For example, a program that calculates interest earned can be altered to round down to the lower 10-cent amount; that small excess of interest earned can be deposited to the perpetrator's account. Although it would take many transactions of this type to be of much benefit, the nature of interest calculation is such that it occurs frequently on many accounts; therefore, the amount of the fraud benefit could build quickly.
- A Trojan horse program is a small, unauthorized program within a larger, legitimate program, used to manipulate the computer system to conduct a fraud.
- For example, the rogue program might cause a certain customer's account to be written off each time a batch of sales or customer payments are processed.
- A trap door alteration is a valid programming tool that is misused to commit fraud.
- As programmers write software applications, they may allow for unusual or unique ways to enter the program to test small portions, or modules, of the system.
- These entranceways can be thought of as hidden entrances, or trap doors.
- Before the program is placed into regular service, the trap doors should be removed, but a programmer may leave a trap door in place in order to misuse it to commit fraud.

Computer systems generate many different kinds of output, including checks and reports.

- If a person alters the system's checks or reports to commit fraud, this is known as output manipulation.
- This kind of fraud is often successful simply because humans tend to trust the output of a computer and do not question its validity or accuracy as much as they might if the output were manually produced

Question 4

[10 marks]

Explain why an enforced code of ethics may have more impact in deterring upper-level management fraud than the implementation of internal controls.

Solution

- A code of ethics is a set of documented guidelines for moral and ethical behaviour within the organization.
- It is management's responsibility to establish, enforce, and exemplify the principles of ethical conduct valued in the organization.
- Upper-level managers are above the level of internal controls;
- Therefore, internal control systems, matching documents, or segregating duties have little impact on the prevention of fraud by upper-level management.

- *Having and enforcing a code of ethics sets the proper “tone at the top” and makes it more difficult for upper-level managers to conduct fraud.*
- *As has become obvious with the flood of accounting fraud scandals at companies such as Enron, WorldCom, Global Crossing, and others, top management does not always exhibit ethical behaviour.*
- *If management does not demonstrate ethical behaviour, employees at all levels are much more likely to follow suit in their disregard for ethical guidelines.*
- *Management that emphasizes and models ethical behaviour is more likely to encourage ethical behaviour in employees.*

Question 5

[10 marks]

The fraud triangle consists of three factors that contribute to or are associated with management and employee fraud. These factors are situational pressure, opportunity and ethics.

Apply the fraud triangle to explain how an employee of Ruacana Medical Supplies may be forced to engage in fraudulent activities.

Solution

The fraud triangle consists of three factors that contribute to or are associated with management and employee fraud. These are:

1. *situational pressure, which includes personal or job-related stresses that could coerce an individual to act dishonestly;*
2. *opportunity, which involves direct access to assets and/or access to information that controls assets, and;*
3. *ethics, which pertains to one’s character and degree of moral opposition to acts of dishonesty.*

An individual with a high level of personal ethics, who is confronted by low pressure and limited opportunity to commit fraud, is more likely to behave honestly than one with weaker personal ethics, who is under high pressure and exposed to greater fraud opportunities.

Question 6

[30 marks]

Based on the Ruacana Medical Supplies case study, evaluate the information in each of the following situations as being either an internal control strength or weakness. Justify your answer.

- a. Ruacana Paediatrics’ office manager approves the extension of credit to patients and authorizes write - offs of uncollectible accounts.
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Solution

Authorization

- *Transaction authorization in real-time processing systems is an automated task.*
- *Management and accountants should be concerned about the correctness of the computer-programmed decision rules and the quality of the data used in this decision.*
- *In POS systems, the authorization process involves validating credit card charges and establishing that the customer is the valid user of the card.*
- *After receiving online approval from the credit card company, the clerk should match the customer's signature on the sales voucher with the one on the credit card.*

Segregation of Duties

- *Tasks that would need to be segregated in manual systems are often consolidated within computer programs.*
- *For example, a computer application may perform such seemingly incompatible tasks as inventory control, AR updating, billing, and general ledger posting.*
- *In such situations, management and auditor concerns are focused on the integrity of the computer programs that perform these tasks.*
- *They should seek answers to such questions as: Is the logic of the computer program correct? Has anyone tampered with the application since it was last tested? Have changes been made to the program that could have caused an undisclosed error?*
- *Answers to the questions lie, in part, in the quality of the general controls over segregation of duties related to the design, maintenance, and operation of computer programs.*
- *Programmers who write the original computer programs should not also be responsible for making program changes.*
- *Both of these functions should also be separate from the daily task of operating the system.*

Supervision

- *In an earlier discussion, we examined the importance of supervision over cash-handling procedures in the mail room.*
- *The individual who opens the mail has access both to cash (the asset) and to the remittance advice (the record of the transaction).*
- *A dishonest employee has an opportunity to steal the check and manual mail room procedures are in place.*
- *In a POS system, where both inventory and cash are at risk, supervision is particularly important. Customers have direct access to inventory in the POS system, and the crime of shoplifting is of great concern to management.*
- *Surveillance cameras and shop floor security personnel can reduce the risk.*
- *These techniques are also used to observe sales clerks handling cash receipts from customers. In addition, the cash register's internal tape is a form of supervision.*
- *The tape contains a record of all sales transactions processed at the register. Only the clerk's supervisor should have access to the tape, which is used at the end of the shift to balance the cash drawer.*

Access Control

- *In computerized systems, digital accounting records are vulnerable to unauthorized and undetected access.*
- *This may take the form of an attempt at fraud, an act of malice by a disgruntled employee, or an honest accident.*
- *Additional exposures exist in real-time systems, which often maintain accounting records entirely in digital form.*
- *Without physical source documents for backup, the destruction of computer files can leave a firm with inadequate accounting records.*

- To preserve the integrity of accounting records, Sarbanes-Oxley legislation requires organization management to implement controls that restrict unauthorized access.
- Also at risk are the computer programs that make programmed decisions, manipulate accounting records, and permit access to assets.
- In the absence of proper access controls over programs, a firm can suffer devastating losses from fraud and errors. Thus, current laws require management to implement such controls.
- Because POS systems involve cash transactions, the organization must restrict access to cash assets.
- One method is to assign each sales clerk to a separate cash register for an entire shift. When the clerk leaves the register to take a break, the cash drawer should be locked to prevent unauthorized access.
- This can be accomplished with a physical lock and key or by password.
- At the end of the clerk's shift, he or she should remove the cash drawer and immediately deposit the funds in the cash room.
- When clerks need to share registers, responsibility for asset custody is split among them and accountability is reduced.
- Inventory in the POS system must also be protected from unauthorized access and theft. Both physical restraints and electronic devices are used to achieve this.
- For example, steel cables are often used in clothing stores to secure expensive leather coats to the clothing rack. Locked showcases are used to display jewelry and costly electronic equipment. Magnetic tags are attached to merchandise, which will sound an alarm when removed from the store.

Accounting Records

DIGITAL JOURNALS AND LEDGERS.

- Digital journals and master files are the basis for financial reporting and many internal decisions. Accountants should be skeptical about accepting, on face value, the accuracy of computer-produced hard-copy printouts of digital records.
- The reliability of hard-copy documents for auditing rests directly on the quality of the controls that protect them from unauthorized manipulation.
- The accountant should, therefore, be concerned about the quality of controls over the programs that update, manipulate, and produce reports from these files.

FILE BACKUP.

- The physical loss, destruction, or corruption of digital accounting records is a serious concern.
- The data processing department should perform separate file-backup procedures .
- Typically these are behind-the-scenes activities that may not appear on the system flowchart.
- The accountant should verify that such procedures are, in fact, performed for all subsidiary and general ledger files.
- Although backup requires significant time and computer resources, it is essential in preserving the integrity of accounting records.

Independent Verification

- The consolidation of many accounting tasks under one computer program removes some of the traditional independent verification control from the system.
- Independent verification is restored somewhat by performing batch control balancing after each run and by producing management reports and summaries for end users to review.

SECTION B: STRUCTURED QUESTIONS

[30 MARKS]

Question 7**[10 marks]**

A purchasing agent for a home improvement centre is also part owner in a wholesale timber company. The agent has sole discretion in selecting suppliers for the timber sold through the centre. The agent directs a disproportionate number of purchase orders to his company, which charges above-market prices for its products. The agent's financial interest in the supplier is unknown to his employer.

What type of fraud is this and what controls can be implemented to prevent or detect the fraud?

Solution***The nature of employee fraud.***

Employee fraud is conducted by non-management employees and usually involves theft or misuse of assets. Internal accounting controls such as the five components of internal control in COSO are intended to assist in the prevention or detection of employee fraud.

The nature of computer fraud.

Computers can be used internally or by those outside the organization as a tool to conduct such fraud as manipulating transactions or data and hacking or other network break-ins. Internal controls and IT controls can assist in the prevention or detection of computer fraud.

The policies that assist in the avoidance of fraud and errors.

There are three sets of policies that an organization can institute to help prevent or detect fraud, errors, and ethical violations: implementation and maintenance of a code of ethics, accounting internal controls, and IT controls.

The maintenance of accounting internal controls.

The components of accounting internal controls are defined by the COSO report as the control environment, risk assessment, control activities, information and communication, and monitoring. Control activities include authorization, segregation of duties, adequate

Question 7**[20 marks]**

Kruger Designs hired a consulting firm 3 months ago to redesign the information system that the architects use. The architects will be able to use state-of-the-art computer-aided design (CAD) programs to help in designing the products. Further, they will be able to store these designs on a network server where they and other architects may be able to call them back up for future designs with similar components. The consulting firm has been instructed to develop the system without disrupting the architects. In fact, top management believes that the best route is to develop the system and then to introduce it to the architects during a training session. Management does not want the architects to spend precious billable hours guessing about the new system or putting work off until the new system is working. Thus, the consultants are operating in a back room under a shroud of secrecy.

Discuss whether management is taking the best course of action for the announcement of the new system and whether you approve of the development process. Provide the appropriate justification for your argument.

Solution

- *Lack of user involvement in systems development.*
- *The major cause of systems failure is the lack of end-user*
- *involvement during critical development stages.*
- *At one time, computer systems development was thought to be the exclusive domain of the systems professionals.*

- *During this period, users (including accountants) abdicated their traditional responsibility for systems design.*
- *Too often, this led to business problems because system designs reflected the analyst's perception of information needs rather than the perception of accountants and other users.*
- *Systems often lacked adequate controls and audit trails.*
- *Today we recognize that user involvement in a system's development is the key to its ultimate success.*
- *However, achieving competent user involvement is still difficult to accomplish.*
- *There are two reasons for this:*
 1. *users tend to become discouraged when they discover the amount of time they must actually invest*
 2. *communication between end users and systems professionals is generally not fluent.*
- *It is often said that these groups speak different languages.*
- *Each tends to resort to its own jargon when communicating with the other.*
- *Therefore, much time is spent identifying user problems and needs and formulating acceptable solutions.*
- *Miscommunications between users and systems professionals lead to mistakes that, sometimes, are discovered too late.*

End of question paper



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Solution
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- *For example, a computer application may perform such seemingly incompatible tasks as inventory control, AR updating, billing, and general ledger posting.*
- *In such situations, management and auditor concerns are focused on the integrity of the computer programs that perform these tasks.*
- *They should seek answers to such questions as: Is the logic of the computer program correct? Has anyone tampered with the application since it was last tested? Have changes been made to the program that could have caused an undisclosed error?*
- *Answers to the questions lie, in part, in the quality of the general controls over segregation of duties related to the design, maintenance, and operation of computer programs.*
- *Programmers who write the original computer programs should not also be responsible for making program changes.*
- *Both of these functions should also be separate from the daily task of operating the system.*

Supervision

- Digital journals and master files are the basis for financial reporting and many internal decisions. Accountants should be skeptical about accepting, on face value, the accuracy of computer-produced hard-copy printouts of digital records.
- The reliability of hard-copy documents for auditing rests directly on the quality of the controls that protect them from unauthorized manipulation.
- The accountant should, therefore, be concerned about the quality of controls over the programs that update, manipulate, and produce reports from these files.

FILE BACKUP.

- The physical loss, destruction, or corruption of digital accounting records is a serious concern.
- The data processing department should perform separate file-backup procedures .
- Typically these are behind-the-scenes activities that may not appear on the system flowchart.
- The accountant should verify that such procedures are, in fact, performed for all subsidiary and general ledger files.
- Although backup requires significant time and computer resources, it is essential in preserving the integrity of accounting records.

Independent Verification

- The consolidation of many accounting tasks under one computer program removes some of the traditional independent verification control from the system.
- Independent verification is restored somewhat by performing batch control balancing after each run and by producing management reports and summaries for end users to review.

SECTION B: STRUCTURED QUESTIONS

[30 MARKS]

Question 7

[10 marks]

A purchasing agent for a home improvement centre is also part owner in a wholesale timber company. The agent has sole discretion in selecting suppliers for the timber sold through the centre. The agent directs a disproportionate number of purchase orders to his company, which charges above-market prices for its products. The agent's financial interest in the supplier is unknown to his employer.

What type of fraud is this and what controls can be implemented to prevent or detect the fraud?

Solution

The nature of employee fraud.

Employee fraud is conducted by non-management employees and usually involves theft or misuse of assets. Internal accounting controls such as the five components of internal control in COSO are intended to assist in the prevention or detection of employee fraud.

The nature of computer fraud.

Computers can be used internally or by those outside the organization as a tool to conduct such fraud as manipulating transactions or data and hacking or other network break-ins. Internal controls and IT controls can assist in the prevention or detection of computer fraud.

The policies that assist in the avoidance of fraud and errors.

There are three sets of policies that an organization can institute to help prevent or detect fraud, errors, and ethical violations: implementation and maintenance of a code of ethics, accounting internal controls, and IT controls.





NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY
Faculty of Computing and Informatics

Department of Informatics

QUALIFICATION : POSTGRADUATE CERTIFICATE IN INFORMATICS (INFORMATION SYSTEMS AUDIT)	
QUALIFICATION CODE: 08PGCI	LEVEL: 8
COURSE: ACCOUNTING INFORMATION SYSTEMS	COURSE CODE: AIS822S
DATE: NOVEMBER 2019	SESSION: 1
DURATION: 3 Hours	MARKS: 100

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Mr Munyaradzi Maravanyika
MODERATOR:	Ms Valerie Garises

INSTRUCTIONS
<ol style="list-style-type: none">1. Answer ALL the questions.2. Write clearly and neatly.3. Number the answers clearly.4. Do not use additional materials5. Cross out any work which should not be marked.6. No pencil work allowed except for diagrams where requested.

THIS QUESTION PAPER CONSISTS OF 3 PAGES
(Excluding this front page)

SECTION A: CASE STUDY QUESTIONS

[70 MARKS]

Question 1

[10 marks]

Prepare a process diagram of Ruacana Medical Supplies processes.

Modify

Question 2

[5 marks]

Space You have been given the task to design new customer account numbers that will be used by Ruacana Medical Supplies' accounting system. Use a group coding scheme to design the customer number and explain the advantage a group coding scheme would give you.

Question 3

[15 marks]

Space A recent audit of Ruacana Medical Supplies has discovered elements of internal computer fraud within the organisation. Internal computer fraud concerns each of the following activities:

- a. Input manipulation
- b. Program manipulation
- c. Output manipulation

Discuss the concept of internal computer fraud and discuss how internal computer fraud may be perpetrated in Ruacana Medical Supplies using the three techniques outlined above.

Question 4

[10 marks]

Space The fraud triangle consists of three factors that contribute to or are associated with management and employee fraud. These factors are situational pressure, opportunity and ethics.

Apply the fraud triangle to explain how an employee of Ruacana Medical Supplies may be forced to engage in fraudulent activities.

Question 5

[30 marks]

Space Based on the Ruacana Medical Supplies case study, evaluate the information in each of the following situations as being either an internal control strength or weakness. Justify your answer.

- a. Ruacana Paediatrics' office manager approves the extension of credit to patients and authorizes write - offs of uncollectible accounts.
- b. Ruacana Paediatrics' office manager may extend credit based on special circumstances rather than using a formal credit search and established credit limits.
- c. Ruacana Paediatrics extends credit rather than requiring cash or insurance in all cases.
- d. The employees of the practice cannot modify the computer software package.
- e. None of the employees who generate revenues or record revenues can write cheques.
- f. Computer passwords are known only by the individual employees and the managing partner, who has no record - keeping responsibilities.
- g. Individual paediatricians document the services they perform on pre - numbered reports that are used for both recording revenues and patient receipts.
- h. Insurance coverage is verified by the office manager before medical services are rendered.
- i. An independent CPA firm prepares the bank reconciliation.
- j. The sequence of prenumbered service reports is accounted for monthly by an independent CPA firm.

