**STRICTLY CONFIDENTIAL**

THE INSTITUTE OF CHARTERED ACCOUNTANTS IN MALAWI

# 2015 EXAMINATIONS

# ACCOUNTING TECHNICIAN PROGRAMME

# PAPER TC4: INFORMATION SYSTEMS

**MONDAY 8 JUNE 2015** **TIME ALLOWED : 3 HOURS**



# SUGGESTED SOLUTIONS

1. (a) The role of information technology in an organization is to support people in their work by using technology to provide ways to collect and use information and to support their work process.

(b) (i) To automate repetitive process

- Automate basic functions such as calculations, which can be carried out faster and more cheaply.

(ii) As provider of information

- Provides a regular flow of information via information system to individuals who require it.

(iii) As means of communication

- Data communication has revolutionalised the way companies operate and the way they are organized.

- Communication is done via e-mails, cell phones, faxes, videos etc.

(vi) Information store

- Information can be stored and be shared via computer network and the internet.

(v) As an integration

- Information technology act as a focal point of communication activities which help link together different departments, and activities within an organization.

(vi) As goods and services supplier

- Some services use computers as an integral part of what they offer to their customers e.g. computerized booking by some air lines.

- Security

  Information systems has been a critical part in enhancing security – CCTV, Biometrics, DNA pin cards etc.

2. (a) A system is a group of interrelated components that work together to achieve a common goal or purpose. Each system has its own boundaries of some kind and includes various inputs, processes, outputs and outcomes geared to accomplish an overall goal of the system. Systems range from simple to complex ones.

(b) Sub-systems are smaller parts of a system. Each system is made up of several subsystems and each subsystem carries out part of the system function, in other words, every subsystem has a purpose within a larger system.

(c) Examples (two) of systems and subsystems

- A human body is a biological system made up of many subsystems like the heart, the circulatory system, the digestive system, etc.

- A car is a mechanical system made up of subsystems such as gear box, engine, carburetor and ignition system etc.

- An organization like a manufacturing company is a business system made up of many administrative and management functions, products, groups and individuals. For example, the production department of this company is a subsystem concerned with accomplishing a specific business goal i.e. manufacturing specific products.
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(d) Open systems are systems which interact with their environment. An open system receives information which it uses to interact dynamically with its environment. A high-functioning system continually exchanges feedback among its various parts to ensure that they remain closely aligned, and focused on achieving the goals of the system. In an open system, additional inputs are admitted from the environment and the openness therefore increases its likelihood to survive and prosper. Open systems aim to ensure compatibility between different systems.

(e) A closed system is a system that does not interact with its environment. It does not take in information from its environment. In a closed system inputs are determined once and constant without any additional input. Closed systems therefore are likely to vanish with time. A chemical reaction taking place in a vacuum is an example.

3. (a) An input device is a piece of hardware that is used to enter data into a computer.

(b) (i) Keyboard is made up of buttons called keys. The keys are arranged into sections.

- Alphabet keys
- Function of F keys (F1 F2 F3)
- Numeric keys
- Arrows keys
- Command keys (insert, delete, home, end, page up/down)

Most keyboards are called ‘qwerty’ keyboards. This name comes from the first six letters on the top role of the alphabet keys. Using a keyboard for too long can lead to health problems such as repetitive strain injury (RSI).

(ii) A mouse is also called a ‘pointing device’ because it enables you to control what happens on the screen by moving the mouse on your desk and pointing, clicking and selecting items on the screen.

A mouse usually has two buttons, a right and left one and also a central wheel which allows you to scroll up and down the page. Some mice have up to five buttons). The left and right buttons have different functions. Left clicking usually lets you put your cursor at a certain point on the page or lets you choose a menu item. Right clicking brings you up a list of relevant menu items from which you can select a task.

(iii) A touch screen can be used as both input and output device. You view the options available to you on the screen (output) and you then use your finger to touch the option that you have chosen (input).

Touch screens work particularly well with a menu driven interface. For example a cash point (ATM) at a bank would first of all ask which service you want. You touch the option ‘withdraw cash’ on the screen. You are then presented with another choice, ‘how much do you want to withdraw’? Once you have chosen how much, you then get other options such as ‘do you want a receipt’?

Another major use of touch screens are smart phones and modern tablet computers. Each ‘app’ is accessed by an icon on the touch screen.

(c) KEYBOARD

Advantages:

- Most computers come with a keyboard supplied
- People are used to using keyboards to enter data, they need very little training
- A skilled typist can enter data very quickly.

MOUSE

Advantages:

- Ideal for use with desktop computers
- Usually supplied as part of a new computer system

- Most computer users are familiar with them and require little training
- Works well in conjunction with a keyboard for data entry.

TOUCH SCREENS

Advantages

- Easy to use – intuitive, does not need much training
- No extra peripherals such as a mouse are needed
- Software can alter the screen while it is being used, making it more flexible than a concept keyboard which has a permanent overlay.
- Touch screen is the main interface on smart phones and tablet computers.
- Can make use of finger gestures to make sophisticated actions such as zooming and selecting.

(4) (a) A software licence is a legally binding agreement that specifies the terms of use for an application and defines the rights of the software producer and the end-user. All software programs or packages must be legally licensed before they may be installed. Proof of purchase (purchase orders, receipts, invoices or similar documentation are acceptable) must be maintained by individuals or departments for all software on a computer.

(b) **Types of software licenses options**

Single Licence

A single copy of the program is purchased on CD-ROMs or floppies together with manuals. The copy should be installed on one machine only. Any other installation on a different machine requires buying another copy (another complete package) from the supplier.

Site Licence

You buy a package and are given permission to install it on a very specific number of machines (e.g. 15 machines) in a single site. There is one or two copies of the user manual. To install on more machines than the licensed number, you pay an extra fee.

Licence by Use

You buy a package and are allowed to have a specific number of simultaneous users, e.g. 15. You can install the software on any number of machines, e.g. 120 as long as there is a maximum of 15 simultaneous users of the package at any one time.

Licence by Station

You buy the software and are allowed to install on a fixed number of machines. A 15 user license means you can only install on 15 machines.

Network Multi-Licence

Typical in a networked environment, software is stored centrally in the file server so that potentially it can be used simultaneously by multiple users. However, having a network does not necessarily mean that the program installed in the file server is always usable simultaneously – most programs would not be. In most cases you need to buy a network version of the program.

If a 20-user network version is bought, then only up to 20 operators in a network can use the package simultaneously. You need to pay for any increase in the number of simultaneous users.

(c) **Licences normally would prohibit the following:**

- Renting the program
- Leasing the program
- Making additions/alterations to the program
  Copying the copyrighted software without permission from the copyright owner.
- Copying the software' manuals without permission from the copyright owner.
- Distributing the copyrighted software permission from the copyright owner.
- Distributing the software's manuals and notes without permission from the copyright owner.

5. (a) **Characteristics of a typical spreadsheet package include:**

- Capability to store a spreadsheet file on backup storage
- Printing spreadsheet data
- User friendliness
- Easy installation
- High speed
- Rearranging the spreadsheet (inserting/deleting rows/columns)
- Formatting spreadsheet data
- Automatic recalculation of formulae once the data in the cell contained in the formulae are changed
- Representing spreadsheet data graphically
- Database facilities (sorting and filtering)
- Macro facility (enables users to automate a sequence of tasks).

(b) The following are some factors which are worth considering when choosing a package:

**The user requirements**

This is the most important factor. It would be senseless to buy software that does not meet the user requirements. However it is very difficult to find a package that can meet all the user requirements – the package may need to be customized or, alternatively and more commonly, the user requirements are modified to match the 'best fitting' package.

**Documentation**

A good package is one that is well documented – it must have a very clear and concise user manual and a comprehensive and clear 'on-screen' help.

**User friendliness**

A good package is one that is easy to use. It should allow users without much computer expertise to operate. Such a package is likely to be:

- one with an 'on-screen help';
- one with user interface design consistency in different modules;
- one that can allow experienced users to operate more quickly by using shortcuts;
- one that provides an easy way of abandoning an operation without causing the system to crash;
- one which makes data entry easy (provision of default entries and by having a logical sequence of data fields on the entry screen, for example, makes data entry easy).

**Other users**

It is very important to find out how many other users are there of the package as their number can be an indication of how good the package is.

**Support and maintenance**

Will the support be there? If so, for how long and in what manner?

**Upgrades and updates**

Shall new versions be sold to you at a discount? What are the conditions for software updates?

**Portability**

Ability of the software to run on different computers

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6. (a) (i) **Operational information**

Operational information is the one used by clerks and supervisors in the operational level of the organization to ensure that specific operational tasks are properly planned and carried. Employees with operational roles need more detailed information to help them carry out their duties.

(ii) **Tactical information**

This is the information used by middle management in the managerial level of the organization to plan, control and make decisions on how best the resources of the organization can be utilized and monitored to meet the strategic objectives set by senior management.

(iii) **Strategic information**

This is information that is relevant to senior management at strategic level of the organization used to formulate long-tem plans or strategic objectives of the organization and assess whether the objectives are being met.

(b) (i) **Characteristics of operational information**

- Relevant to the immediate term
- Concerned with specific tasks
- Detailed, being the processing of raw data
- Prepared frequently
- Largely quantitative
- Derived from internal sources

(ii) **Characteristics of Tactical information**

- Relevant to short and medium terms
- Concerned with activities or departments
- Summarized at a lower level
- Prepared routinely and regularly
- Based on quantitative measures

(iii) **Characteristics of strategic information**

- Relevant to long term
- Concerned with the whole organization
- Uncertain as it is normally based on future estimates
- Summarized at high level
- Derived from both external and internal sources
- Often prepared on ad hoc basis

(c) Examples:

(i) **Operational information**

Examples:

- the rate of pay per hour
- number of hours worked by each employee
- outstanding purchase order etc.

(ii) **Tactical information**

Examples:

- cashflows
- sales projections
- staffing levels
- labour turnover
- short-term purchasing requirement

(iii) **Strategic information**

Examples:

- capital equipment needs
- cost of raising new funds
- total cash needs
- future market prospects
- overall profitability etc.

7. (a) **Information Systems**

An information system is any functional system whether manual or automated that comprises of people, machines, data, methods and procedures organized to collect, process, store, transmit and distribute information.

**OR**

It is a set of interrelated components working together to collect, store, process, analyze and disseminate information for specific purposes.

(b) **Components of Computer-based Information Systems**

A computerized Information System consists of:

- Hardware – computers and other equipment

- Software – programs enabling the hardware to process data
- Data – the raw materials
- People – to operate the system (Computer users) and use the system outputs (end-users)
- Procedures – set of instructions on how to combine the other components. Procedures are there for people to follow.
- Resources – stationery, network resources, storage facilities etc.
- Environment – suppliers, customers, bankers etc.

(c) **Organizations require formal information systems**

Organizations need formal systems to manage information

1. Because of the large volume of the information handled.

2. For division of labour e.g. different individuals will deal with different aspects of a sales order.

3. Due to the need for continuity since individuals do not do same job forever.

## 8. NETWORK TOPOLOGY

In networking the term topology refers to the layout of connected devices on a network. A Network topology should be thought of as a network's virtual shape or structure.

The network can have a physical or a logical topology. The physical topology describes the layout of computers and where the workstations are positioned. The logical network topology describes how the information flows through the network.

**Bus topology**

Advantages of a Bus Topology

- Easy to connect a computer or peripheral to a linear bus.
- Requires less cable length than a star topology.

Disadvantages of a Bus Topology

- Entire network shuts down if there is a break in the main cable.
- Terminators are required at both ends of the backbone cable.
- Difficult to identify the problem if the entire network shuts down.
- Not meant to be used as stand-alone solution in a large building.

**Star topology**

Advantages of a Star Topology

- Easy to install and wire.
- No disruptions to the network when connecting or removing devices.
- Easy to detect faults and to remove parts.

Disadvantages of a Star Topology

- Requires more cable length than a linear topology.
- If the hub or concentrator fails, nodes attached are disabled.
- More expensive than linear bus topologies because of the cost of the concentrators.

**Ring topology**

Advantages of Ring Topology

- Each node has equal access
- Capable of high speed data transfer.

**Disadvantages of Ring Topology**

- Failure of one computer on the ring can affect the whole network.
- Difficult to troubleshoot the network when there is failure.

**Tree topology**

Advantages of Tree Topology

- Point-to-point wiring for individual segments.
- Supported by several hardware and software vendors.

Disadvantages of Tree Topology

- Overall length of each segment is limited by the type of cabling used.
- If the backbone line breaks, the entire segment goes down.
- More difficult to configure and wire than other topologies.

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