

STRICTLY CONFIDENTIAL

THE PUBLIC ACCOUNTANTS EXAMINATION
COUNCIL OF MALAWI

2012 EXAMINATIONS

ACCOUNTING TECHNICIAN PROGRAMME

PAPER TC 4: INFORMATION SYSTEMS

(DECEMBER 2012 MAIN)

WEDNESDAY 5 DECEMBER 2012

TIME ALLOWED: 3 HOURS
2.00 PM - 5.00 PM

SUGGESTED SOLUTIONS

1. Functions of the following:

- (a) CPU
- to manipulate data
 - control other parts of the computer system
 - co-ordinate the other hardware
 - link between software and hardware.
- 3 Marks**
- (b) Secondary storage
- store data when not in use
 - store programmes when not in use
 - act as an off-site storage device
 - used to move software from computer to computer.
- 3 Marks**
- (c) Input devices
- they convert data into electronic form for processing in the computer
 - they convert instructions (programmes) into electronic form for processing in the computer.
- 2 Marks**
- (d) Output devices
- convert data in a form that people can understand
 - some output devices store data for future use
 - some output devices store programmes for future use
 - some output devices act as storage devices for electronic data.
- 3 Marks**
- (e) Communication devices
- control the passing of information to and from communications networking
 - control passing of information to and from other computers
 - acts as bridge between two computers.
- 3 Marks**
- (f) Buses
- this is a circuitry path that transmit data signals among the various paths of the computer system
 - it connects various hardware in the computer system
 - hardware bridging the other hardware.
- 3 Marks**
- (g) Primary storage
- store all or part of the program that is being executed
 - store operating system programs that control the operations of the computer
 - holds the data that is being processed.

(TOTAL: 20 MARKS)

2. (a) Good information is the information that adds value to the understanding of a situation. **3 Marks**

(b) **Five** qualities of good information are:

- accurate
- complete
- cost beneficial: it should cost less to obtain than the benefit derived from it
- user targeted
- relevant
- timely
- easy to use.

Any five, 1 Mark each = 5 Marks

(c) **Four** factors that make information valuable:

(i) Source of information

If information comes from a source that is widely known and respected in form of quality, thoroughness and accuracy, it will be more valuable than information from an unknown or untested source, because it cannot be relied upon with confidence. **3 Marks**

(ii) Ease of assimilation

Information must be more easily and quickly understood. **3 Marks**

(iii) Accessibility

If information can be made available in an easy accessible place (such as the internet) users do not have to commit too much time and effort to retrieve it. **3 Marks**

(iv) The value of obtaining information

Information, which is obtained but not used, has no actual value to the person that obtained it. A decision taken on the basis of information received also has no actual value. It is only the action taken as a result of a decision, which realizes actual value for the company. The cost of collecting information bears no relation to its value.

An item of information, which leads to an increase of K2,000 in profit, is not worthy having if it costs K3,000 to collect. **3 Marks**

(TOTAL: 20 MARKS)

3. (a) (i) A bit is a binary digit that represents a 0 or 1. **3 Marks**

(ii) Electronic signals are represented as – presence of the signal 1 and absence 0. **3 Marks**

(iii) Bytes are a string of Binary digits either singly or collectively put together. Digital computer operate directly with the binary digits. **3 Marks**

- (b) (i) A string of 8 digits form a byte. **2 Marks**
- (ii) 1 byte form a unit of storage i.e. 8 digits. **1 Mark**
- (iii) Kilobyte – 1,024 (bytes). **2 Marks**
- (iv) Megabyte – $1,024 \times 1,024 = 1,048,576$ (bytes). **2 Marks**
- (v) Gigabyte – $1,024 \times 1,024 \times 1,024$ (bytes) = 1,073,741,824 (bytes). **2 Marks**
- (vi) Terabyte – $1,024 \times 1,024 \times 1,024 \times 1,024$ (bytes) = 1,099,511,627,776 (bytes). **2 Marks**
- (TOTAL: 20 MARKS)**

4. (a) Application software is a set of instructions (program) that produce information from raw business data as required by a user e.g. payroll, production control and tailor made programs. These programs are usually bought or written separately for a specific use. **3 Marks**
- (b) A spreadsheet is an application package which enables the arithmetical and statistical analysis of data. Spreadsheets are widely used for financial modeling. A spreadsheet in structure is similar to a sheet of analysis paper, that is, the depiction of text and data using columns and rows.

Example:

	A	B	C	D	E
1		B1			
2	A2				E2
3				D3	

A spreadsheet will usually feature some of the following:

Use of formulas – each cell has a unique identifying address e.g. B1 which can be used in formulae. This facility allows models to be build and what if analysis to be performed. Use of editing facilities allows the layout to be altered as required. Contents of individual cell on the stocks can be copied, moved or deleted plus many more. **5 Marks**

- (c) **Five** major features that should be considered when selecting a spreadsheet package are:
- (i) its ability to handle your specific need.
- (ii) its compatibility with the existing software.
- (iii) its compatibility with the existing hardware.
- (iv) the cost of purchasing the software in relation to similar products on the market.
- (v) local support
- (vi) the need for re-training. **5 Marks**

(d) YES – computers require operating software to function. Operating software is machine oriented mix of macros and programs which take over the running and internal organisation of the computer hardware once the human operator has passed over control. It is the manager of the computer resources responsible for scheduling tasks and controlling the hardware. No computer can function without the resource manager. **3 Marks**

(e) A computer virus can be classified into operating systems software group. The virus does not process raw data into information. IT simply attacks files on the computer operating system rendering it unfunctional or malfunctional.

4 Marks

(TOTAL: 20 MARKS)

5. (a) Administrative controls

These are designed to ensure an acceptable level of efficiency and discipline in the day to day running of the computer department and they comprise the following:

- a clear division of duties between data entry staff, computer operators, programmers/systems analysts and control staff.
- within the department, an organizational chart should exist and the principal tasks defined and allocated.
- control and data preparation staff only should have access to source documents.
- computing staff should not have access to manually held financial records.
- access to computer room during operational running should be restricted to operators.
- only users and control staff should be allowed to amend data.
- only operators and librarians should be allowed access to files and computer programs.
- maintenance of computer generated and processed log of all computer processing.
- notation of operator duties
- use of operating standards manuals
- minimum of two operators per shift.
- provision and use of operating instructions for each program.
- noting of all operator intervention on computer log.
- controls on issue/use of computer files by librarian.
- files/program should be duplicated, with copies kept securely away from the computer room.
- use of file identification and reconstruction procedures.
- rules for physical installation security should be laid down.
- there should be standby procedures in case of breakdown.
- use of passwords to provide system access.
- use of passwords to provide levels of access.
- logging of terminal usage.
- frequent changes in passwords.
- restriction in usage of certain terminals.
- separation of database administrator from operations staff.

- central control by the database administrator of access, the database, and the data dictionary.
- encryption and authentication of data transmitted over public network.

Any ten, 1 Mark each = 10 Marks

(b) System development controls

- hardware requirements for the system
- cost of the hardware requirements
- hardware compatibility with the existing hardware
- file conversion required
- staff training needs
- geographical position of the outlets
- possibility of networking
- security of the system
- availability of support for hardware
- availability of support for software
- software requirement
- compatibility of the software with the existing ones (which of the old ones would still be useful).

**Any ten, 1 Mark each = 10 Marks
(TOTAL: 20 MARKS)**

6. (a) Systems implementation activities

(i) System testing:

Before any computer system is brought into use, it is essential to ascertain that it carries out all its intended functions within the established parameters. Testing should be an on-going activity throughout the design and programming stages. Where possible, involve the users during testing. The complete system and its environment must be tested to the satisfaction of the analyst and users.

3 Marks

(ii) Education

This should start well before any development work is undertaken to give users the ability to participate in the development of their own system.

2 Marks

(iii) File conversion

Involves the conversion of old files data (if it exists) into the form required by the new system. Commonly, the data contained on source documents has to be edited, because it is not required, or required in a different format. This requires trained staff to be released from the user department to perform these duties or supervise temporary staff.

3 Marks

(iv) Change over procedures

Change over can take place when the system has been proved to the satisfaction of the systems analysts and all other activities have been completed.

2 Marks

- (b) (i) Problem definition
This is where the problem is introduced and understood. The original idea should be understood.
- (ii) Feasibility studies
This involves finding out the viability of the system and its cost and its acceptance or rejection.
- (iii) System analysis
This is where the full analysis of the system is done – how the system will run.
- (iv) System design
This is where system files are designed in order to ensure efficiency.
- (v) Testing
When the coding is done, the system is tested for desired output.
- (vi) Implementation
When testing is over and the system is ready for use, there is a requirement for implementation procedures such as changeover procedures.
- (vii) System review
This is when the system is running. Periodic reviews are required in order to find flaws (bugs) and improve on it.

**Any five, 2 Marks each = 10 Marks
(TOTAL: 20 MARKS)**

7. (a) Internet is a worldwide network of computer connected by a wide area network that can be used by anyone through an internet service provider. Application can be obtained via the internet and in addition there is the world wide web (www). This consists of a large number of services that each has a number of web pages. A web page is simply a document that can be viewed across the internet using a web browser software e.g. microsoft internet explorer. In order to help you find information, there are special servers known as search engines. The search engines pages through the web pages to find information you are looking for on a particular subject. **5 Marks**
- (b) Globalization is a term used to describe the trend towards standardized products, services, tastes and organizational policies worldwide making the world a global village.

It is the way organizations that operate in more than one country design their marketing policies and control systems to meet the expectations of global customers. In the context of the information system, it is the process of transforming a business and its information systems from a national context to

a global context. Development of the internet is the backbone to globalization as it is the infrastructure that is used. **5 Marks**

(c) Digital firm

It is a firm where nearly all of the organization's significant business relationships with customers; suppliers and employees are digitally enabled and mediated. Core business processes are accomplished through digital networks spanning the entire organization or linking multiple organizations. Digital firms are distinguished from traditional firms by their near total reliance on a set of information technologies to organize and manage.

For managers of digital firms, information technology is not simply an enabler but rather the core of the business and primary management tool. **5 Marks**

(d) Feedback

Information system also require feedback which is output that is returned to appropriate members of the organization to help them evaluate or correct the input stage processing way also be modified. **3 Marks**

Environment actors are anybody or anything that interacts with the organization and its information systems e.g. customers, suppliers, competitors, stakeholders and regulatory agencies. **2 Marks**

(TOTAL: 20 MARKS)

8. (a) (i) Input controls

Data verification, this involves assessing that data entered matches source documents through : spot checks, task totals, logs etc.

(ii) Data validation, this involves ensuring that data entered is not incomplete or unreasonable. This can be through limit checks, control totals, log, encrypting data during transmission. **4 Marks**

(b) Processing controls

Should ensure the accuracy and completeness of processing. This is through:

- program development controls
- periodic running of test data
- password limitation to certain processes
- authority requests on certain limits or loss

4 Marks

(c) Output controls:

Should ensure accuracy, completeness and security of output through

- (i) investigating and follow-up of error reports
- (ii) investigating and follow-up exception reports
- (iii) batch controls to ensure all items are processed and returned
- (iv) controls over distribution/copying output
- (v) labeling of output devices (media).

4 Marks

(d) Backup controls:

Aim is to maintain system data integrity through copying of files in anticipation of future failure

- (i) Regular testing of stored data
- (ii) A well planned back-up scheme
- (iii) Storage tape rotation
- (iv) A well planned back-up archive strategy, a plan for a regular back-up of critical data
- (v) Archive plan
- (vi) A disaster recovery plan in place.

4 Marks

(e) Contingency controls

A contingency is an unscheduled interruption of computing services that require measures outside the day to day routine operating procedures.

- (i) Preparation of a disaster recovery plan as one stage of organization wide security policy.
- (ii) Once off testing of the disaster recovery plan at some intervals.
- (iii) Introduce standby procedures; power generators, manual documents of transaction processes.
- (iv) Recovery procedures once cause of breakdown has been identified.
- (v) Prepare personnel to ensure that they carry out recoveries when required.

4 Marks

(TOTAL: 20 MARKS)

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