

**STRICTLY CONFIDENTIAL**

**THE PUBLIC ACCOUNTANTS EXAMINATION  
COUNCIL OF MALAWI**

**2011 EXAMINATIONS**

**ACCOUNTING TECHNICIAN PROGRAMME**

**PAPER TC 4: INFORMATION SYSTEMS**

**(DECEMBER 2011)**

**TIME ALLOWED: 3 HOURS**

**SUGGESTED SOLUTIONS**

1. (a) (i) Software is a list of activity rules of a job instruction containing the operations to be performed in the required sequence to produce desired results. Data processing systems consist of raw data being subjected to a regulated activity to produce information (output). A processing device (hardware) operating under activity rules (software) performs the regulated activity. Hardware are all devices that are physical parts of the computer which software commands to produce results. Hardware is infrastructure.  
  
(ii) A basic computer with a CPU, modem, telephone line and an ISP server.  
  
(iii) Two groups of software are:
  - (1) Operating system software
  - (2) Application system software.

Operating system software is a machine oriented mix of macros subroutines and programs which take over the running and internal organisation of the computer once the human operator has passed over control. In other words, the operating system acts as a manager managing resources, scheduling tasks and controlling the hardware.

Application software is a part of instructions that produce information from raw business data e.g. payroll production control and tailor made programs. Application software produces results for the user.

- (b) Windows are grouped under operating system software since it is software necessary for the computer to run and manage other programs and system resources and infrastructure. Spreadsheets are grouped under application software that is necessary for the computer to process raw business data to turn into useful information.
2. (a) The abbreviation CPU stands for central processing unit. This is where all processes occur. The abbreviation ALU stands for arithmetic and logic unit. This is where arithmetic computation, data comparisons and transfer occur.
  - (b) (i) The power of the computer i.e. speed, size of storage and memory, and specification of all items and available posts.  
  
(ii) A full description of the software to be provided (built-in or supplied software).  
  
(iii) Maintenance agreements with supplier of the equipment and software support/upgrades.  
  
(iv) Contractual terms: cost, arrangements for payment and warranty.  
(v) Capacity and expansion capabilities.

- (vi) Security and standby facilities.
  - (vii) Documentation: hardware and software manuals and details of training materials.
  - (viii) Supplier details: size of firm, business experience and performance, number of clients, demonstration sites, availability of support outlets, financial capacity.
  - (ix) Ability of the equipment to process your requirements (load).
  - (x) Compatibility with existing software and hardware.
- (c)
- (i) The two common types of networks are local area network (LAN) and wide area network (WAN). The local area network is where computers are linked in the same geographical area without use of telephone, satellite or modem. WAN uses the modem and telephone line or satellite to connect computers over a wide geographical area.
  - (ii) A home personal computer that has access to the internet is on a network. It is on a wide area network because it uses a modem and a telephone line or satellite or a wireless link to get linked to internet services that are geographically very far from it.
  - (iii) Advantages of being on network are:
    - It is cheap as resources like printers and disks are shared.
    - Can be used for mailing.
    - Original files are transferred to and from places at a very fast rate.
    - Fastest way of sharing information.
    - Easy to load software updates across the network.
      - Easy to control virus updates.
3. (a) Physical control of the computer installation:
- (i) Computer room must be locked.
  - (ii) Access to the computer room be restricted to authorized staff only.
  - (iii) Fire extinguishers should be installed in the building.
  - (iv) There must be a log book for visitors.
  - (v) Physical check by guards for visitors and staff for consumables and data files plus hardware.
  - (vi) The computer room must be on a high ground to be secure from flooding.
  - (vii) Fire detectors be installed in the computer room.
  - (viii) All devices must be labeled and identified.

- (b) Internal controls regarding data and information:
- (i) Use of passwords to access data.
  - (ii) Rotating staff to avoid tricks.
  - (iii) Use of register for reports.
  - (iv) Use of computer generated numbers for important information.
  - (v) Regular use of log reports to identify anomalies.
  - (vi) Regularly review exception reports to address the exceptions.
  - (vii) Controlled disposal of excess hardware.
- (c) Control of consumable hardware such as tapes, diskettes, computer paper etc :
- (i) Follow manufacturers procedures as regards storage and operation.
  - (ii) Register for all consumable movements.
  - (iii) Physical check on staff.
  - (iv) Keep in lockable safe when not in use.
  - (v) Cable all consumable devices e.g. tapes, disks, diskettes.
  - (vi) Burn or shred all excess papers.
  - (vii) Restrict use of all devices from external organizations.
4. (a) (i) Classifying is when crude data is grouped according to some chosen characteristics.
- (ii) Sorting is when within the grouped data a certain parameter(s) is used to re-arrange data in a certain sequence.
- (iii) Calculating is when the data is added, subtracted, divided and any arithmetical application is applied to the data.
- (iv) Summarizing is when totals using some parameter are arrived at and information is presented for that group.
- (b) Tasks that might be carried out for each category listed below:
- (i) Transaction processing system:  
Order processing, materials requisition, materials ordering, picking lists, maintenance schedules, parts explosion and production routing.
  - (ii) Management information system:  
Production schedules, stock storage reports, shipping status, order status, plant utilization, plant reliability, batch status, customer queries etc.
  - (iii) Decision support system:  
Special reports, factory/department performance, production performance analysis, simulations, demand forecasts, value of work in progress, plant safety.

5. (a) Program documentation must contain:
- (i) Program narrative
  - (ii) Program authorization
  - (iii) Logic flow charts
  - (iv) Decision tables
  - (v) Coding sheets
  - (vi) Glossary of symbolic address names
  - (vii) Sample output reports
  - (viii) Input documents sample
  - (ix) Test data results (correct and error data)
  - (x) Program progress and testing history
  - (xi) Operating instructions
  - (xii) Amendment
- (a) Four stages that are found in software development:
- (i) Program specification
  - (ii) Program design
  - (iii) Coding
  - (iv) Testing.
6. (a) Targets/objectives for:
- (i) Data processing manager  
To achieve an effective, economic and efficient department.
  - (ii) Systems analyst  
To successfully design and implement an effective, economic and efficient data processing system.
  - (iii) Programmer  
To successfully design and implement effective, economic and efficient computer programs.
- (b) Methods of achieving the objectives:
- (i) Data processing manager:  
Planning, organizing, coordinating, controlling, motivating, innovating, improving.
  - (ii) Systems analyst  
Problem definition, problem analysis, solution synthesis, solution implementation, amendments.
  - (iii) Programmer  
Program design, program coding, program testing, documentation, amendments.

- (c) How the objectives are measured:
- (i) Data processing manager  
Budgets, user satisfaction, labour turnover.
  - (ii) Systems analyst  
Project duration, user satisfaction, systems reliability and efficiency, system security and accuracy, system cost effectiveness.
  - (iii) Programmer  
Program accuracy, program efficiency, program duration, program storage utilization.
7. (a) The first generation of computer language consisted of machine language which required the programmer to write all instructions in the 0s and 1s of the binary code and specify storage locations for every instruction and item data used. Programming in machine language was a very slow and labour intensive process. It required the technical know-how.
- (b) The second generation programming language developed from machine language, and was the assembly language. Like machine language, assembly language was designed for specific machines and specific microprocessors. It was primarily used in system software. It was not transferable from one make of machine to another.
- (c) Third generation computer languages (fortran, cobol, basic, pascal and c). These were specific instructions which appeared as brief statements that were more like natural language than assembly language. They were less efficient in the use of computer resources than earlier languages. Easier to write and understand. They were not machine specific and were multi user.
- (d) Fourth generation computer languages consist of a variety of software tools that enable end-user to develop own software applications with minimal effort. Examples include query languages, report generators and application generators. No expertise is required to learn the languages. They contain built in compilers.
8. (a) Types of services offered by bureaus:
- (i) Hardware  
Provide hardware to its clients where data is taken to the bureau for processing and results returned.  
  
Provide hardware to clients on client's premise either on rental, lease, or purchase for clients.

- (ii) Software  
Write application software at clients request.  
Client use bureaus software for processing data.
- (iii) Consultancy  
Consultancy on buying computer systems  
Consultancy on installation of in-house computer.
- (iv) Staffing  
Trains the clients staff  
Provide the client with staff.
- (v) Security  
Act as an offsite storage  
Secure data during transmission or transportation.

(b) Steps in selection of a computer bureau:

- (i) Identify what jobs you have for the bureau. If the jobs will be regular or once-off and, if possible work out a time estimate for doing them.
- (ii) Prepare a benchmark job and approach several reputable bureaus or use a broker to obtain detailed quotations.
- (iii) You need to ascertain the availability of hardware and its compatibility with your system.
- (iv) Availability of adequate operating systems and software compatibility.
- (v) Experience, reliability, reputation and the bureaus financial stability.
- (vi) Real service provided and extras.
- (vii) If they can handle your job to your requirement.
- (viii) Confidentiality, security and insurance arrangements with the bureau.
- (ix) Delivery dates and turn-around time.
- (x) Availability of standby facilities at the bureau.
- (xi) Select, train and appoint a bureau liaison man in the customer organisation who will negotiate contracts and prices.

**E N D**