

SOLUTION – BUSINESS INFORMATION SYSTEMS NOVEMBER 2010

SOLUTION 1

a) The measures to be taken would include:

- Proper routine maintenance plan to be approved, engineer and head of IT Dept to sign off each month's completed work.
- Planned maintenance activities to be adopted proactively under which parts are not allowed to break down completely but replaced at the end of manufacturers' specific equipment useful life.

Proper environmental controls should be enforced, including:

- Strick policy that no food should enter any of the laboratories.
- Room temperature should be closely monitored, using at least twoo room thermometers in two extreme cornes of the laboratry.
- Humidity levels should be monitored using hygrometers in the laboratory.
- The laboratories should be thoroughly cleaned at least at the close of day.

b) Two other maintenance activities that could be employed are:

- Adaptive maintenance
- Perfective maintenance
- Connective maintenance

SOLUTION 2

a) To minimise or avoid harware and media pilferring, the following could be considered:

- A supervisor should be appointed for each laboraty to give directions to sudents and ensure the right thing is sone always, maintaining standards.
- Students should not be allowed to enter the laboratories with bags and should be thoroughly searched at the point of exit.
- CCTV cameras should be mounted in the labolatries
- There should be sanctions to deter any unfoured behaviour from any student.

- b) If examination questions leakage should be avoided or minimised, actions to be taken would include:
- Staff and students should be educated to drive home the need to protect the image of the Institute and safeguard the public confidence in its certificates.
 - Folders containing the examination questions should be protected with high-security passwords.
 - The Institute's Intranet should be duly protected by a firewall to prevent unauthorised access and use by both outsiders
 - PHYSICAL Access Control to exam Director's Office and PC

SOLUTION 3

- a) The general systems theory attempts to describe the common properties of systems categorise types of systems and describe how systems react to environmental influences. It also shows how systems can be broken down into sub-systems, each of which operates as a system in its own right, but still remain a part of the overall system. In this regard, system development activities adopt two main approaches – the holistic approach and the reductionist approach.

In the holistic approach, the developer attempts to take a broad perspective of the various sub-systems and considers all of them in the process of development. No attempt is made to consider any particular part in any different detail to the detriment of any other part. The objective is to ensure that they all fit into a complete or whole unit.

In the reductionist approach, however, more attention is paid to, and greater emphasis put on certain parts of the system because these are considered to be greater significance than the others. This way, the resulting system may be incapable of achieving its set objectives in full, leading to sub-optimality.

The theory may be applied to the situation in which a group managing director may wish to know whether his group of companies is worth more than the sum of the individual subsidiaries.

A management accountant may also wish to know whether by integrating the costing system with the manufacturing process control system, the result will be more useful than keeping the two individual systems.

- b) Sub-systems may 'overlap', making them directly to (and under the control of) several other sub-systems. This is a phenomenon referred to as 'coupling'. For instance, inventory control may be linked to production control and sales control, as well as to the management of working capital. Similarly, the Payroll and the Human resource sub-systems may be linked.

When sub-systems are so linked, any amendment effected on any one of them must suit the others, else the entire arrangement may fail to work well. Coupling places a marked restriction on how many changes any component part of the assembly may conveniently undergo.

‘Synergy’ is a term used to describe the condition under which the total output of coupled systems is found to be much greater than the sum of the outputs of the individual systems when not coupled.

SOLUTION 4

- a) (i) A computer worm is an independent computer program that copies itself from one computer to another computer over a network. Unlike viruses, worms operate on their own without attaching to other computer program files and rely less on human behaviour in order to spread from computer to computer.

A worm is that type of high-tech maliciousness; a program that copies itself repeatedly into memory or a selected medium, until no more space is left. Most worms, having made copies of themselves, release a ‘pay load’, an action designed to disrupt your system. For instance, the Magistrate worm hides itself in the hard disc, moving around in your main address book and then mailing itself to people you interact electronically with.

- (ii) A Trojan horse is a program that appears to be benign but then does something other than expected. It is not a virus because it does not replicate itself but is often a way for viruses or other malicious code to be introduced into a computer.
- b) How a program is rated is determined by its user-friendliness, the controls inherent in its use, its business impact and its ease of maintenance.

Some of the qualities of a good program are:

- Ease of data entry.
It must be easy for the user to input data.
This requires that:
 - the data entry screen should be designed in a logical order;
 - the data entry screen should be clearly and pleasantly designed, titles of fields should be easy to read and should match the titles used on the source documents;
 - default entries should be provided (these are values assumed by the software if user does not exercise an option).
- Use of clear icons and menus.
It should be possible for users to make reasonable guesses about what they need to do. Clear icons and menus facilitate this.
- Provision of on-screen Help.
If a user requires help, he should be able to request it at the touch of single key, e.g. F1, or by clicking on ‘Help’ from a pull-down menu.

- Use of dialogue boxes and on-screen prompts.
- By the use of these boxes and prompts, the user is given a second opportunity to confirm an intended command so as to avoid a possible need to reverse the effects of unintentionally-used commands (e.g. when there is the need to delete data).
- The quality of software is also dependent on the controls inherent in the software with respect to how easy or otherwise it is for unauthorised people to have access to the software to use it whatever purposes. Any good programme should have controls to keep out unauthorised users while at the same time possessing powerful validation checks meant to detect invalid or wrong input data.
- A good programme should also be accompanied by a good and complete documentation and should be easy to maintain.

SOLUTION 5

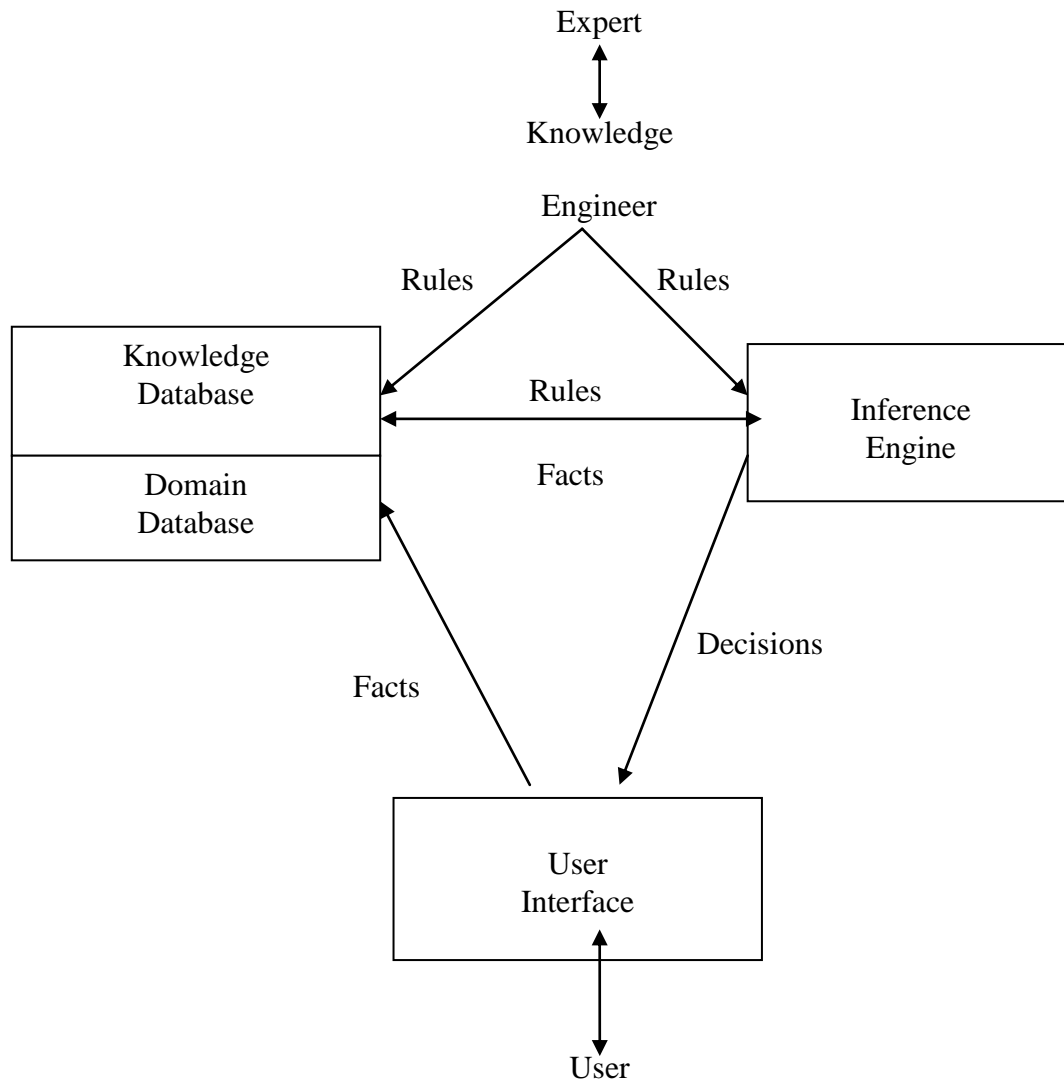
- a) An Expert System (ES) is a piece of software with accompanying knowledge that uses facts, knowledge and reasoning techniques to solve problems that typically require human expert abilities.
- b) A knowledge engineer will be required to 'mine' the knowledge of experts in the professional area of Taxation in Ghana and convert the details into IF-THEN-ELSE production rules that are then used to build knowledge database of the expert system.

The domain database will comprise the entire spectrum of the Tax Laws in Ghana. As and when the laws and policies in Taxation in Ghana change, the knowledge Acquisition Module, which is the part of the software responsible for updating the rules in the domain database, is used to effect the necessary changes.

In order to generate an ES that is typical of the Ghanaian situation, an Es shell will then be used as the Inference engine (the software that will drive the rules in the databases).

These products will all be installed on a computer disk and then made available to all who may demand any knowledge or information on the Ghanaian tax regime, especially Accountants and Tax workers.

The setup may be represented by a diagram like the following:



SOLUTION 6

- a) Disc files are updated by the 'overlay' method. This is also referred to as updating 'in situ'. The method entails new or amended data being written where the old data were stored.

b)

- A secondary key is an alternative identifier for a database; the value may identify either a single record or a subset of records.
- A foreign key is a pointer to the records of a different file in a database; enables the database to link the records of one type to those of another type. For instance, an ORDER record contains the foreign key customer-number to identify the CUSTOMER record associated with the order.

c) The components of DBMS are the following:

- ❖ DBMS Engine – accepts logical requests from the various other DBMS sub-systems, converts them into physical equivalent, and actually accesses the database and data dictionary as they exist on a storage medium.
- ❖ Data Definition Sub-system – helps the user to create and maintain the data dictionary and define the structure of the files in a database.
- ❖ Data Manipulation Sub-system – helps the user to add, change, and delete information in a database and query it for valuable information.
- ❖ Application Generation Sub-system – contains facilities to help users to develop transactions-intensive applications.
- ❖ Data Administration sub-system – helps users to manage the overall database environment by providing facilities for backup and recovery, security management, query optimisation, concurrency control and change management.

SOLUTION 7

Decision

Recruitment, Com should opt for Method A, coupled with Training Programme T1, for an expectation of GH¢1,500.

Diagram to be provided