



# **MARKSCHEME**

**May 2001**

## **INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY**

**Standard Level**

**Paper 2**

**SECTION A**

1. (a) **Outline *two* security features of the system that controls access to the Server (other than providing an authorised password to log on).** **[2 marks]**

*Award [1 mark] for each feature up to a maximum of [2 marks].*

- Require passwords to be changed regularly
- Set working hours in which the system can be accessed
- Assign permissions to users to perform different tasks (Read - Write - Full Control) on directories and files
- Assign permissions within the data file (table)

- (b) **State *two* situations in which data contained in the mortgage account files must be changed.** **[2 marks]**

*Award [1 mark] for each situation up to a maximum of [2 marks].*

- When a new loan is granted to a customer
- When a new payment must be input into the system
- When a loan is cancelled
- When data must be amended because of clerical errors
- When due interests are calculated

- (c) **Describe *two* ways in which organisations keep data secure.** **[4 marks]**

*Award up to [2 marks] for each full description of any of the following up to a maximum of [4 marks]. Award only [1 mark] for each partial description.*

- provide firewalls
- limit physical access to computers connected to the network
- require frequent password changes
- require passwords not easily guessed or deciphered
- back up data files
- encrypt data files
- require employees to log off when they finish their work
- store audits of all transactions, including the previous values, data and time of changes, and the new values
- record in audit file the identity of all people accessing the system
- provide off-site storage of back ups
- have the server restrict access to specific computers (client machines)

- (d) **Discuss *four* social and ethical factors managers should consider when establishing IT policies for an organisation.** **[12 marks]**

*Award up to [3 marks] for a full discussion of any of the factors below up to a maximum of [12 marks]. Award only [1 mark] for noting a social or ethical factor without any discussion.*

**Social implications**

- ensuring that users are authorised to use the computer
- ensuring that users are trained and have the relevant documentation
- allowing users to familiarise themselves with the system and its security
- providing a help desk to consult if users have doubts
- providing adequate computer equipment to prevent health problems, and training users on how to avoid them

**Ethical implications**

- ensuring the individual's right to privacy
- ensuring the 'need to know', *i.e.* staff in the organisation must have appropriate access to selected data in order to perform assigned duties
- using data only for the purpose for which it was collected
- maintaining the data up-to-date
- editing (validating) data to ensure values are within acceptable ranges
- informing employees of the data stored about them
- giving employees the opportunity to review, change or correct data stored about them
- retaining data for no longer than necessary
- not distributing or sharing personnel data without the individual's permission
- considering who owns intellectual rights to data, software or the analysis of data (information 'created')

**SECTION B**

2. (a) **Outline *two* types of information which could be regarded as confidential in a medical database.** **[2 marks]**

*Award [1 mark] for each item stated up to a maximum of [2 marks].*

- specific illness of the patient
- treatment of the patient
- records indicating consultation of the patient with other doctors and medical organisations
- results of diagnostic tests (blood tests)

- (b) **Describe *two* methods which could be used to ensure that only authorised people can access the database.** **[4 marks]**

*Award up to [2 marks] for each clear description up to a maximum of [4 marks].*

*Award only [1 mark] for a partial description.*

- assign passwords
- establish network security (firewall)
- monitor and record users' access by time and date
- install software to monitor any attempts to access the database

- (c) **Discuss and evaluate *three* social consequences which have emerged as a result of recording patients medical information in databases.** **[12 marks]**

*Award up to [3 marks] for each fully discussed consequence.*

*Award only [1 mark] for a partial discussion of the consequence.*

*A total of [3 marks] is available for the weighing up and/or evaluation of the arguments. Award [1 mark] for each piece of evidence of weighing up and/or evaluation of any of the arguments or any combination of the arguments.*

*The maximum mark available for this part of the question is [12 marks].*

**Social implications**

- greater availability of medical information for doctors to diagnose other patients' illnesses
- greater access to medical information by patients using on-line services
- worldwide access to medical information
- 24 hour a day access to information
- increase in the variety of on-line medical services which are available (purchasing medicine, medical advice, medical databases)

3. (a) **State *three* types of information the buyer needs to provide to the on-line store in order to make a purchase.** [3 marks]

*Award [1 mark] for each item stated up to a maximum of [3 marks].*

- name of the item to be purchased (*e.g.* books, software)
- necessary information to locate the item (*e.g.* airline reservation systems, vacation arrangements)
- personal information (*e.g.* name, address, telephone, email address)
- credit card information

- (b) **Outline *three* ways in which consumers can find Web addresses for an item which they wish to purchase on-line.** [3 marks]

*Award [1 mark] for each item stated up to a maximum of [3 marks].*

- advertisements contain web addresses and email addresses for on-line purchases
- use a search engine to search for the item
- search engines contain links to on-line shopping possibilities
- web addresses may be suggested by another person who has made a similar purchase

- (c) **Discuss and evaluate *three* social consequences which have resulted from the increase in on-line purchasing.** [12 marks]

*Award up to [3 marks] for each fully discussed consequence.*

*Award only [1 mark] for a partial discussion of the consequence.*

*A total of [3 marks] is available for the weighing up and/or evaluation of the arguments. Award [1 mark] for each piece of evidence of weighing up and/or evaluation of any arguments or any combination of the arguments.*

*The maximum mark available for this part of the question is [12 marks].*

- increased use of credit card purchases
- possible increased financial burden on consumers
- consumers are able to locate and purchase items which are difficult to find
- consumers can shop 24 hours a day
- consumers have access to a wider range of products and can purchase items worldwide
- consumers can compare the prices of items more easily
- expanded services by some stores (grocery deliveries, delivery by mail)
- disabled persons are able to make purchases more easily
- increase in the ease of use by the consumer through increased appliance and on-line services communication, *e.g.* refrigerators order standard products directly from their database by email to the grocery store

4. (a) **Define a graphical user interface.** **[2 marks]**

*Award up to [2 marks] for a full definition on the lines of the definition below.*

*Award only [1 mark] for a partial definition.*

- A graphically-based computer monitor interface in which images, icons, dialogue boxes and standard widgets are used to facilitate communication between humans and machines.

(b) **Explain *one* reason why the company might want to change its software to one supplier and explain *one* reason why a GUI is preferred.** **[4 marks]**

*Award up to [2 marks] for a clear explanation of why the company might want to change its software and up to [2 marks] for a clear explanation of why a GUI might be preferred.*

*Award only [1 mark] for partial explanations in both cases.*

Reasons for the company to change its software:

- applications not compatible between different software; file transfer from software to software might be difficult or impossible to achieve
- high costs of maintenance of different software
- expense of training employees on different applications
- lack of common features between packages makes it difficult to swap employees from one task to another
- greater expense of paying software licences from different suppliers. Suppliers offer discounts to licence software packages.
- technical support needed from different suppliers

Reasons why GUI is preferred:

- GUIs are intuitive and it is easier for people to understand and learn than typed commands, lowering the training costs.
- GUIs are consistent. As GUI applications have the same user interface as their OS, users don't need to learn new ways of doing things whenever they switch applications.
- A common GUI makes it easier for the company to switch employees from one task to another.
- Less support is needed by employees who use a common GUI.

- (c) **Discuss and evaluate *three* social and/or ethical consequences that the company must take into account before purchasing any new software.** **[12 marks]**

*Award up to [3 marks] for each fully discussed consequence.*

*Award only [1 mark] for a partial discussion of the consequence.*

*A total of [3 marks] is available for the weighing up and/or evaluation of the arguments.*

*Award [1 mark] for each piece of evidence of weighing up and/or evaluation of any of the arguments or any combination of the arguments.*

*The maximum mark available for this part of the question is [12 marks].*

**Social implications**

- People used to working with one software package might be deskilled.
- Employees might feel uncomfortable with the new user interface.
- Employees might feel they will lose their jobs if they don't learn how to use the new software package.
- Software integration could mean the need for fewer technical support staff.

**Ethical considerations**

- Plans for the implementation of the new software should take into account the expertise of current employees.
- Employees must have the opportunity to be trained on the new software before they are moved to other jobs or faced with possible redundancy.
- Employees should be given time and resources to practice new skills.
- Access authorisation rules must be designed and published before any employee can be blamed for malpractice.
- New software licenses must be purchased.

5. (a) **Outline two communication services, other than telephone conversations, which are available through cellular phones.** [2 marks]

*Award [1 mark] for each service stated up to a maximum of [2 marks].*

- Internet access
- email
- messaging

- (b) **Describe two policies which an organisation might implement regarding the use of cellular phones.** [4 marks]

*Award up to [2 marks] for each clear description up to a maximum of [4 marks].*

*Award only [1 mark] for a partial description.*

- Cellular phones may not be used in areas where they will disrupt the work of fellow employees.
- Cellular phones must not disrupt the normal work of the employee who owns the cellular phone.
- Cellular phones owned by the company may only be used for company purposes.
- Cellular phones must not be used in any area where they may affect the functioning of other devices.

- (c) **Discuss and evaluate three social and/or ethical impacts that could result from the widespread use of cellular phones.** [12 marks]

*Award up to [3 marks] for each fully discussed impacts.*

*Award only [1 mark] for a partial discussion of the impacts.*

*A total of [3 marks] is available for the weighing up and/or evaluation of the arguments. Award [1 mark] for each piece of evidence of weighing up and/or evaluation of any of the arguments or any combination of the arguments.*

*The maximum mark available for this part of the question is [12 marks].*

**Social impacts**

- increase in the sales of cellular phones to all age groups
- decrease in meeting with persons either professionally or personally
- increase in the services available to consumers using cellular phones
- decline in the cost of personal phone

**Ethical impacts**

- possible increase in health problems due to cellular phones
- increase in the annoyance due to cellular phones being used in public places
- increase in the environmental problems of disposing of obsolete cellular phones



## **SECTION B: extended response questions - quality of construction**

- Extended response questions in Section B of ITGS Paper 2 carry a mark total of 20. Of these marks, 18 are awarded for content and 2 for the quality of construction of the answer.
- Two aspects are considered:  
  
expression of relevant ideas with clarity  
structure of the answers.
- **One** quality mark is to be awarded when the candidate satisfies **one** of the following criteria.
- Thus **two** quality marks are awarded when a candidate satisfies **both** criteria.

### **Clarity of expression**

*The candidate has made a serious and full attempt to answer all parts of the question and the answers are expressed clearly enough to be understood with little or no re-reading.*

### **Structure of answer**

*The candidate has linked relevant ideas to form a logical sequence in at least two parts [(a), (b), (c)] of the question.*

- It is important to award these quality marks on the overall answer, taking into account the answers to all parts, although the part with the largest number of marks is likely to provide the most evidence.
  - Candidates who score very highly on the content marks need not necessarily gain the two points for the quality of construction (and vice versa).
  - For **sample scripts for moderation** the reason why quality marks have been awarded should be stated.
  - Indicate the award of quality marks by writing **Q2, Q1 or Q0** in **red** at the end of the answer.
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