

MARKSCHEME

November 2001

INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY

Standard Level

Paper 2

SECTION A

1. (a) List *two* input devices that could be used to incorporate pictures of the cars into the Web pages. *[2 marks]*

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

- flat bed scanner
- digital camera
- video camera
- CD-ROM drive for photos which have been developed onto CD-ROM

- (b) State the meaning of *http*, *www*, and *www.carsales.com* in the address *http://www.carsales.com*. *[3 marks]*

Award [1 mark] for each part of the address up to a maximum of [3 marks].

http means hypertext transfer protocol

www means World Wide Web – part of the Internet containing hyper linked documents

www.carsales.com is the domain name

or accept

www.carsales.com is the computer that stores the Web pages

- (c) **Describe *one* security issue which could be a concern to buyers and sellers in a networked environment and suggest *two* possible solutions. [3 marks]**

Award up to [1 mark] for a complete statement of any one of the security issues below.

Award [1 mark] for each appropriate solution for the security issue identified up to a maximum of [2 marks].

Award [3 marks] maximum for the question.

Issue

- The Web site could be vulnerable to external attack by hackers.

Solution

- A firewall (software or hardware) is used to prevent unauthorised access to computer files.
- Passwords must be used in order to access data.
- The Web site manager installs software which reports attempted attacks.

Issue

- Viruses, especially sent as attachments on emails

Solution

- Virus detection software is installed on all of the computers.
- Virus detection software is regularly upgraded to the most recent version.
- Company employees are not allowed to download attachments in emails.
- Passwords ensure that only authorised employees can have access to make installations.

Issue

- Transmission of secure data such as credit card and customer information

Solution

- Buyers must check that a Web site is secure before entering and sending personal information.
- The seller operates a secure computer system which prevents the interception of data.
- Data encryption is used between the buyer and seller.

Issue

- Authorised access to secure data

Solution

- Only authorised access should be allowed to secure data.
- Passwords should be installed in order to access secure data.
- Secure data such as credit card information which is no longer needed should be deleted.

Reward other acceptable answers.

- (d) **Online sales can have many advantages for both sellers and customers but can also cause some concerns. Discuss *three* social issues that could result from online sales in the car industry. Do not include any answers which were given in part (c).** **[12 marks]**

Award only [1 mark] if the issue is merely stated.

Award [3 marks] for issues which are clearly stated with some discussion up to a maximum of [9 marks].

Do not reward any answers which were given in part (c).

Award [1 mark] for each piece of evidence of weighing up and/or evaluation up to a maximum of [3 marks].

A maximum of [12 marks] may be awarded for part (d).

Social issues:

- A company can become ‘global’ without opening stores around the world.
- Communication with customers could be difficult if there is a problem with supplies.
- Reduced sales for local businesses and the consequent effect on the local economy
- The possibility of unemployment in accounting and retail sales
- Customers need to invest in access to the Internet and email.
- Using credit cards online means money is often paid ‘up front’.
- Cost to supplier to set up e-commerce
- Customers can shop without leaving home.
- Customers can save money by checking prices around the world.
- Customers can’t touch and feel the goods – they can’t test drive the car.

Reward other acceptable answers.

SECTION B

2. (a) **Outline *two* items of information (other than name, address and telephone number) that the police department may collect about an individual or about the offence.**

[2 marks]

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

- photograph of the offender or criminal
- finger prints of the criminal
- description of the offender or criminal
- description of the offence or crime (location, time, details)
- witnesses for the offence or crime

Reward other acceptable answers.

- (b) **Describe *two* advantages that information stored in digital form has over records in paper form.**

[4 marks]

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

Award only [1 mark] for a partial description.

- easily transmitted or made available online to other institutions and organisations
- data matching with other databases
- faster access and searching capabilities
- easier to update and edit
- easier to backup information stored in digital form
- information can be provided in a variety of report formats

Reward other acceptable answers.

- (c) **Discuss *three* consequences (social and/or ethical) arising from the storage of personal information in police records.** **[12 marks]**

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

Award only [1 mark] for a statement of the consequence.

Award [1 mark] for each piece of evidence of weighing up and/or evaluation up to a maximum of [3 marks].

A maximum of [12 marks] may be awarded for part (c).

Social and/or ethical consequences:

- Police must ensure the accuracy of their data (instances of errors in data have caused problems for individuals).
- The data must be updated periodically.
- Data must be collected and entered in a reliable manner.
- Individuals should be made aware of what personal data is contained in the database.
- Information from the database should only be made available to other law enforcement agencies.
- Measures have to be taken to ensure the security of the information in the database (passwords, network security, authorised access).

Reward other acceptable answers.

3. (a) **Activity on the school’s networking system is monitored. A list of those students who have accessed the server and the use of the server is automatically displayed on the server’s monitor. State *two* items that this list might include.**

[2 marks]

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

- a record of facilities used by each person including processor time
- number of pages printed
- amount of hard disk space used
- details of system failures / crashes
- details of files stored / updated / deleted
- details of email usage
- time and duration of log-in
- ID of log-in users
- network address / station ID
- failed log on attempts

Reward other acceptable answers.

- (b) **The network manager is concerned that some users may install unauthorised software on a desktop computer on the network. Explain *two* problems that might arise if unauthorised software is installed.**

[4 marks]

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

Award only [1 mark] for a partial explanation.

- Software may introduce non-standardisation.
- Software may facilitate unauthorised data changes (e.g. by pass audit log).
- Personally owned software has been installed.
- The software is public domain software and has not been authorised by the network manager and could cause system crashes and other problems.
- The company has not purchased the appropriate licence.

Reward other acceptable answers.

- (c) **The school is producing a Code of Conduct regarding the use of its computer network. Discuss *two* issues that the school should address in the Code of Conduct. Discuss *one* way in which the rules may be enforced.** **[12 marks]**

Award up to [3 marks] for each fully discussed issue and an appropriate suggestion about the way the rules could be enforced.

Award only [1 mark] for a partial discussion of an issue.

Award [1 mark] for each piece of evidence of weighing up and/or evaluation up to a maximum of [3 marks].

The maximum of [12 marks] may be awarded for part (c).

Issues for consideration in producing a Code of Conduct

- Staff and students are only allowed to use those computer resources, data or communication facilities which have been allocated to them.
- Computing resources may only be used for properly authorised purposes.
- Users do not have authorisation to grant anyone else access to the facilities allocated to them.
- Staff and students may not access, alter, erase or install any software on either the client computers or servers unless authorised to do so.
- Authorised users of computer systems must take reasonable care to prevent unauthorised use of the computing resources allocated to them.
- Members of the school may not use computer systems or networks in such a way as to compromise the integrity or performance of the systems or networks.

Reward other acceptable answers.

Ways of enforcing the Code

- withdrawal of access to facilities from any user found guilty of breach of the Code
- oral or written warnings
- suspension from school

Reward other acceptable answers.

4. (a) **Describe *two* hardware components which must be available in order for laptop computers to be able to access the school network.** [2 marks]

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

- laptops installed with appropriate network accessing cards
- receiving devices distributed throughout the school for infra-red technologies
- school network with servers, storage capabilities, and backup system
- CD-ROM tower for the central access to CD-ROMs

- (b) **Students will also be able to have access to the Internet in school from their laptop computers. Explain *two* policies regarding the access of the Internet which would have to be developed.** [4 marks]

Award up to [2 marks] for each complete explanation up to a maximum of [4 marks].

Award [1 mark] for a partial explanation.

Do not accept answers which do not address 'access to the Internet'.

- Access is denied to undesirable sites (pornographic sites, racist sites, terrorist sites).
- Students must use netiquette in their communications (no spamming, no flaming).
- No downloading of huge files which disrupts access for students and teachers
- No downloading illegal programs

Reward other acceptable answers.

- (c) **Discuss *three* considerations (social and/or ethical) which a school would need to consider before implementing this ‘any time any place’ environment which laptop computers would provide.** **[12 marks]**

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

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

Award [1 mark] for each piece of evidence of weighing up and/or evaluation up to a maximum of [3 marks].

The maximum of [12 marks] may be awarded for part (c).

Social and/or ethical considerations:

- providing virus protection
- ensuring security of communication and information
- installing a backup system for the school network
- financing hardware and software
- maintenance of the hardware (portable computer systems, network)
- making software legally available to students and teachers
- training on using the network with portable computer systems
- insurance for the portable computer systems
- developing policies for use of the portable computer systems and the network
- changing educational methodologies for learning and teaching
- modifying the school curriculum in accordance with the new technologies

Reward other acceptable answers.

5. (a) **Outline *two* information technology tools (hardware and/or software) which a dentist would need in order to digitize the image of a patient's teeth.** **[2 marks]**

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

- digital camera
- video camera
- scanner and scanning software for photographs
- normal camera and then develop the film onto a CD-ROM

- (b) **Explain *one* advantage and *one* disadvantage of storing dental images digitally rather than in a normal x-ray or photograph.** **[4 marks]**

Advantage

- Electronic storage takes less physical space to store.
- Faster and easier to store and access to electronic images
- Easier to make backup copies of electronic images

Reward other acceptable answers.

Disadvantages

- There is considerable investment in the hardware and software.
- Training may be required in order to save the images in specialised programs.
- Significant time will have to be invested in learning to use the system.
- Advances in technology could make the accessing of images difficult years later.

Reward other acceptable answers.

- (c) **Discuss *three* implications (social and/or ethical) which must be considered when using digital images in dentistry. Do not include any answers which were given in part (b).** **[12 marks]**

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

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

Do not award any answers which were given in part (b).

Award [1 mark] for each piece of evidence of weighing up and/or evaluation up to a maximum of [3 marks].

The maximum of [12 marks] may be awarded for part (c).

Social and/or ethical implications related to:

- providing virus protection
- insuring security of communications and information
- installing a backup system
- financing hardware and software
- maintenance of the hardware (portable computer systems, network)
- training on using the network with portable computer systems
- developing policies for dentistry staff
- communicating to the patient the purpose of using digital images

Reward other acceptable answers.
