

MARKSCHEME

November 2002

INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY

Standard Level

Paper 2

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SECTION A

- 1. (a) State *two* pieces of student information, other than the identification number, which could be contained on the card. [2 marks]**

(Award [1 mark] for each item stated up to a maximum of [2 marks]. Do not award information about the school or the student's identification number.)

- photograph of the student.
- name of the student.
- signature of the student.
- bar code or some other indication for the identification number.
- address.
- telephone number or emergency telephone number for the student.
- date of birth / or age / or year group.

Reward other acceptable answers.

- (b) State *two* methods for indicating the identification number on the card so that it could be read by the identification card reader. [2 marks]**

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

- printed as letters and numbers and read by using OCR software
- printed as a bar code
- on a magnetic strip
- on a chip

Reward other acceptable answers.

- (c) **Describe how *two* items of information are obtained by the school about a student without the student knowing it.** **[4 marks]**

(Award [2 marks] for each item of information fully described up to a maximum of [4 marks].)

(Award only [1 mark] for each item if it is partially described or if it is only stated.)

- the pattern of attendance and lateness to school over a period of time. Date and time is collected when entering the school and the information is stored and analysed in a database.
- the accumulated number of attendance and lateness. Date and time is collected when entering the school and the information is stored and analysed in a database.
- eating habits and food preferences. Types of food collected when using the identification card in the cafeteria and the information being stored and analysed in a database.
- types of library materials which the student signs out of the library, collected when the identification card is used in the library and the titles and types of materials are stored and analysed in a database.
- types of items which the student purchased in the school store, collected by using the identification card and the data being stored and analysed in a database
- dates and times the student was located in various locations in the school, collected as the identification card is used in the various card readers.

Reward other acceptable answers.

- (d) **Discuss *three* social *and/or* ethical concerns which students may have about owning and using the identification card and weigh up the importance of your arguments.** **[12 marks]**

(Award up to [3 marks] for a full discussion of each social and/or ethical issue up to a maximum of [9 marks].)

(If a social and/or ethical issue is stated but not discussed, award a maximum of [1 mark] for each issue up to a maximum of [3 marks].)

(Award up to [3 marks] for weighing up the importance of arguments.)

(Maximum total is [12 marks].)

- Can the identification card be easily duplicated for misuse?
- Does the student have access to the data that has been collected?
- Who has access to the data?
- Will the data be made available to other organisations and institutions?
- Is the data matched to other records in the school which are being maintained about the student?
- What effort is made within the school to protect the data from unauthorised access?
- How long will the data be kept that has been collected?
- Who owns the data?
- Are the students misusing / abusing the identification card system by lending the cards to other students and having their parents pay the costs?

Do not accept answers which address the issue that data been collected without the student's knowledge.

Reward other acceptable answers.

SECTION B

2. (a) **Outline *two* types of costs that John will be able to reduce by changing from a business in a shop to a business exclusively on the Internet.**

[2 marks]

(Award [1 mark] for each cost which is outlined, up to a maximum of [2 marks].)

- rent / tax rates for the shop premises
- heating / lighting costs for the shop premises
- telephone costs for the shop premises
- maintenance/cleaning costs for the shop premises
- salary and other employment costs for the shop assistant
- travel costs to / from work

Reward other acceptable answers.

- (b) **His son already has the hardware they feel they need to run the business, but they decide to replace the software currently being used. Describe *three* types of software that they will need to buy to run the business effectively and for what purpose each item will be used. Brand names are not acceptable.**

[6 marks]

(Award [2 marks] for each description where the software is identified and its purpose fully described up to a maximum of [6 marks].)

(Award only [1 mark] for each item of software if it is only stated up to a maximum of [3 marks].)

- word processor for letters and general clerical purposes
- database for maintaining customer and stock records
- spreadsheet for maintaining records of sales, inventory, *etc.*
- Web page creation software for creating the business Web site
- image editing software for editing the images of stamps, *etc.*
- accounts package for managing the business finances
- encryption software for accepting credit card purchases
- security software to prevent unauthorised access

Reward other acceptable answers.

- (c) **Identify *three* social factors that they will need to discuss before changing to a business exclusively on the Internet, and discuss the implications of the Internet. Discuss the implications of each and weigh up the importance of your arguments.** **[12 marks]**

(Award up to [3 marks] for a full discussion of each social factor up to a maximum of [9 marks].)

(If the social factor is stated but not discussed, award a maximum of [1 mark] for each factor up to a maximum of [3 marks].)

(Award up to [3 marks] for weighing up the importance of arguments.)

(Maximum total is [12 marks].)

Social factors may include:

- shop assistant loses his/her job
- personal customers lose the face to face dialogue with owner / assistant
- change in home life because house is now a place of business
- health issues for family because of frequent computer use
- increased risk of social isolation because the business is in the home
- potentially a loss of customers and income due the business being moved to the Web and in the owner's home

Reward other acceptable answers.

3. (a) Describe *two* precautions which could be used by the company to assure readers that their credit card information is secure when it is submitted and stored. [4 marks]

*(Award [2 marks] for each precaution fully described up to a maximum of [4 marks].)
(Award only [1 mark] for each precaution if it is partially described or if it is only stated.)*

- firewall to prevent unauthorised access
- password access to information only available to company employees
- use encryption methods for transferring and storing data

Reward other acceptable answers.

- (b) Describe *two* ways readers can gain access to the remaining chapters of the book after the payment has been made. [4 marks]

*(Award [2 marks] for each way of fully described up to a maximum of [4 marks].)
(Award only [1 mark] for each way if it is partially described or if it is only stated.)*

- The chapters have been stored as file(s) which can be downloaded.
- The chapters are Web pages which can be printed.
- The chapters will be sent to the reader as attachments in an email.
- The chapters will be sent to the reader on CD-ROM or diskette.

Reward other acceptable answers.

- (c) Discuss *three* social *and/or* ethical consequences of making books available online rather than in printed form and weigh up the importance of your arguments. [12 marks]

(Award up to [3 marks] for a full discussion of each social and/or ethical consequence up to a maximum of [9 marks].)

(If a consequence is stated but not discussed, award a maximum of [1 mark] for each consequence up to a maximum of [3 marks].)

(Award up to [3 marks] for weighing up the importance of arguments.)

(Maximum total is [12 marks].)

- no expert advice to author from a professional publisher on his work
- decrease in employment in professional publishing companies
- increase in the number of companies supporting authors to publish their books online
- books published more quickly on the Web than in print
- books produced in the author's own style without having to conform to professional publishing policies
- increased chance of plagiarism of electronic versions of books
- books more easily available on-line to disabled and elderly people

Reward other acceptable answers.

4. (a) State *one* software application which can be used to produce advertisements in print and *one* software application to produce advertisements on the World Wide Web. Brand names are not acceptable. [2 marks]

(Award [1 mark] for one software application for printed advertisements which is stated and [1 mark] for one software application for web advertisements which is stated up to a maximum of [2 marks].)

printed advertisements

- desktop publishing software
- image editing software
- scanning software

Reward other acceptable answers.

web advertisements

- web page design program
- a program to create animated gifts or other animations
- image editing software
- scanning software

Reward other acceptable answers.

- (b) Explain *three* ethical considerations which Web page designers must consider before placing an advertisement on their pages. [6 marks]

(Award [2 marks] for each ethical consideration fully explained up to a maximum of [6 marks].)

(Award only [1 mark] for each ethical consideration outlined but not explained.)

- Does the advertisement offend anyone who accidentally surfs the site?
- Is the advertisement appropriate for the audience who usually views this site?
- Does the advertisement contain reliable information?
- Does the advertisement link to a reliable company?
- Does the advertisement contain any copyright material?
- Does the advertisement use unfair advertising against another company?

Reward other acceptable answers.

- (c) **Discuss *three* differences set in a social context between advertising in magazines and newspapers and advertising which appears on the World Wide Web. Weigh up the importance of your arguments.** [12 marks]

(Award up to [3 marks] for a full discussion of each difference set in a social context up to a maximum of [9 marks].)

(If a difference is stated but not discussed, award a maximum of [1 mark] for each difference up to a maximum of [3 marks].)

(Award up to [3 marks] for weighing up the importance of arguments.)

(Maximum total is [12 marks].)

- Advertising on the Web can contain animations, sounds, and special effects which are appealing to some viewers.
- Printed advertisements can contain higher quality photos and better layout which can influence purchasing.
- Advertising on the Web is unsolicited and information ‘pushed’ at the reader unexpectedly.
- Both printed magazines and Web pages are heavily financed by advertisements.
- Advertisements on the Web can be linked to other Web sites for immediate purchasing.
- Advertisements on the Web are linked to company Web sites providing more information for the buyer.
- Advertisements in print can be read anywhere. Web advertisements depend on the reader having access to hardware and the Internet.
- Online advertisements focus on customers accessing information via the Web and making payments online.

Reward other acceptable answers.

5. (a) Describe *two* uses for such surveillance. [4 marks]

*(Award [2 marks] for each use fully described up to a maximum of [4 marks].)
(Award only [1 mark] for each use if it is partially described or if it is only stated.)*

- to monitor the area for crimes in progress
- to identify and monitor known criminals
- to identify stolen cars (by registration plate recognition)
- to identify and trace missing persons
- to identify areas of traffic congestion

Reward other acceptable answers.

(b) The images captured from these cameras are often stored on a computer database.

Describe *two* processes that the image may undergo before being stored in a database. [4 marks]

*(Award [2 marks] for each process fully described up to a maximum of [4 marks].)
(Award only [1 mark] for each process if it is partially described or if it is only stated.)*

- Analogue to digital conversion is achieved by reducing the infinite range of colours available in each pixel to a finite range, and replacing the actual colour by its closest equivalent in that range. It is needed because computers need to represent the contents of a pixel by a number.
- Data compression is achieved by recognising the similarity of adjacent pixels and storing these as a group rather than representing each one. It is needed in order to reduce the storage capacity required to manageable levels.
- Video editing software is used to capture still images and/or video segments which are entered into the database.

Reward other acceptable answers.

- (c) **Discuss *three* possible social *and/or* ethical issues raised by the use of video cameras for surveillance and weigh up the importance of your arguments.** **[12 marks]**

(Award up to [3 marks] for a full discussion of each social and/or ethical issue up to a maximum of [9 marks].)

(If a social and/or ethical issue is stated but not discussed, award a maximum of [1 mark] for each social and/or ethical issue up to a maximum of [3 marks].)

(Award up to [3 marks] for weighing up the importance of arguments.)

(Maximum total is [12 marks].)

Issues may include:

- What loss of personal privacy can result from surveillance?
- What have been the outcomes of the misidentification of criminals or stolen vehicles?
- Why has crime increased in areas not covered by this system?
- How can the information be used for purposes other than those intended or made public?
- What security exists for the video surveillance system and video archive?
- Who has accessibility to viewing the surveillance monitors and the video archive?
- What are the ethical responsibilities of the persons viewing the surveillance monitors?
- Is the public aware that the surveillance system exists and for what purpose?
- Who owns the video archive?
- Has the surveillance system reduced crime and/or increased personal safety?
- How can the video information from the surveillance system be used and by whom and for what purpose? Legal issues, security issues, *etc.*

Reward other acceptable answers.
