



MARKSCHEME

May 1999

INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY

Standard Level

Paper 2

SECTION A

1. (a) (i) *(Award [1 mark] for the answer below)*
25-30 days

(ii) *(Award [1 mark] for the answer below)*
75%

(iii) *(Award [2 marks] for the range below)*
12-15%

(Award only [1 mark] for the ranges below)
10-11.9 or 15.1-18%

(b) *(Award [2 marks] for each conclusion below; up to [6 marks] maximum)*

- all companies experience some loss even with very short 'downtimes'
- only a few suffer total loss with short 'downtimes'
- half suffer total loss after approximately 25 days
- after a few days companies with either minor or serious losses begin to suffer total loss
- the percentage of companies with critical losses remains almost constant after ten days of 'downtime'

(c) (i) *(Award [1 mark] for any of the below; up to [1 mark] maximum)*

- businesses with an on-line reservation system: airline, hotel, car rental.
- stores with point-of-sale data capture or cash registers
- banks, ATMs

(ii) *(Award up to [2 marks] for a full explanation; [1 mark] for a partial explanation)*

Computers are essential to provide a business service - loss of the service results in lost business.

(d) *(Award up to [2 marks] for a full explanation; [1 mark] for a partial explanation)*

- when the school is on holiday and there is little need for computers.
- most administrative functions requiring computers can be delayed and or performed manually for a two week period if the computers are 'down'.
- teachers can use traditional teaching methods for two weeks if the computers needed for CAL are down.

(Answers for question 1 continued on next page)

(Answers for question 1 continued from previous page)

(e) *(Award up to [2 marks] for a full explanation if ethical reasons are included, otherwise it is worth [0 marks]; award another [1 mark] for a relevant company; Maximum [3 marks])*

- air traffic control systems
- hospitals, systems monitoring the sick or controlling treatments.
- Because human lives depend on accurate, reliable, and timely data from the systems.

(f) *(Award up to [2 marks] for a full explanation; [1 mark] for a partial explanation)*

A few companies (less than 5%) are not highly dependent upon computer systems and can adjust to manual or paper-based processes. Their use of computers is to supplement traditional processes and has not completely replaced alternative methods.

SECTION B

Up to two additional marks are available for the quality of construction of each of the answers to each of the TWO questions. 18 marks are for content (in the markscheme).

- Two aspects are considered:
 - expression of relevant ideas with clarity
 - linking of relevant ideas a logical sequence.
- The 2 quality marks are to be awarded according to the following criteria:

[2 marks] Consistently expresses relevant ideas with clarity.

AND

Consistently links relevant ideas form a logical sequence.

[1 mark] Achieves both the aspects above, partially (*i.e.*, sometimes).

OR

Achieves one aspect completely (*i.e.*, consistently).

OR

Achieves one aspect completely and one partially.

[0 mark] Achieves only one of the above aspects partially.

OR

Achieves neither of the aspects at all.

- It is important to judge this on the overall answer, taking into account the answers to all parts of the question, although the part with the largest number of marks is likely to provide the most evidence.
- Candidates that score very highly on the content marks need not necessarily automatically gain the two points for the quality of construction (and vice versa).
- The important point is to be consistent in the awarding of the quality points. 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.

2. (a) *(Award [1 mark] for any of the below up to a maximum [2 marks])*

- CD-ROM drive
- sound board
- modem, cable modem
- browser to navigate the WWW
- software to run add-ons (video, music, voice, radio)

(b) *(Award up to [2 marks] for a full explanation of each disadvantage; [1 mark] for a partial explanation; maximum [4 marks].)*

The points below are examples of topics candidates might include in their answers: be open to other suggestions.

- teacher-student contact is reduced
- errors in software used may lead to improper learning
- requires additional time for training in the use of the tool
- investment in technology tools is required

(c) *(Award up to [3 marks] for explanation of each of three issues; up to [9 marks]. A further [3 marks] is available for a weighing-up/evaluation of each argument. Total maximum [12 marks])*

The points below are examples of topics candidates might include in their answers: be open to other suggestions. Much fuller explanation is needed to gain the marks for this question.

- research
- planning
- teacher training
- community involvement
- classroom restructuring

3. (a) *(Award [1 mark] for any of the below; up to [2 marks] maximum)*

- e-mail
- interactive, on-line ordering
- database searching
- tutorial
- advertising
- (ftp) downloading of software, data, images, sound, or video files
- chat (rooms)
- discussion groups
- **be open to other appropriate answers**

(b) *(Award up to [2 marks] for each full explanation, up to [4 marks] maximum; [1 mark] for each partial explanation or only a description or statement.)*

- use software filter to screen undesired material
- provide only supervised access to computers connected to the Internet
- require registration and passwords to access selected sites
- impose governmental controls on materials; the international and open nature of the Internet makes this approach difficult to implement or ineffective
- impose penalties on those who provide inappropriate materials
- accept other appropriate answers

(c) *(Award up to [3 marks] for explanation of each of three issues; up to [9 marks]. A further [3 marks] is available for a weighing-up/evaluation of each argument. Total maximum [12 marks].)*

- the development of hyper linked documents using simple HTML tags which make the development of Web documents easy
- the provision of power search engines which make it easy and quick to find documents
- the development of easy to use browsers with integrated functions for processing images, sound and video
- the expansion and competition among network access providers which has increased access to the network at affordable prices and at acceptably high transmission speeds
- the development of platform independent software / languages such as Java which facilitate many interactive functions. The development, ease of use, and “power” of Java is likely to have the greatest influence on future development of the Internet
- accept other appropriate answers

4. (a) *(Award up to [2 marks] for a complete definition; [1 mark] if partially correct.)*

- a program that guides users through a sequence of choices and helpful information leading to the completion of specific tasks, such as software installation, mail merges, or computer configuration.

(b) *(Award up to [2 marks] for each comparison (similarities and differences) of the two features; up to [4 marks] maximum. Award a maximum of [2 marks] if no comparison is made.)*

- modern software has some kind of on-line documentation (help screens, help topics, etc.) while earlier software had only printed documentation, e.g. manuals of instructions.
- modern software has context-sensitive help to assist the user in specific situations. Previously this was achieved either by reading a reference manual or undertaking a tuition course.
- tutorial features of modern software include the use of wizards to perform specific operations or to install a piece of software. Early software achieved these objectives by providing user manuals.

Available today:

- on line documentation - help screens, help topics, etc.
- content-specific help
- use of wizards to specific operations

Early software:

- manual of instructions
- reference manuals
- need to know commands
- list of available commands
- on-line help through drop down menus

(Answer for question 4 part (c) continued on next page)

(Answer for question 4 part (c))

- (c) *(Award up to [2 marks] for a full description of each interface; up to a maximum of [4 marks])*

Examples: Virtual Reality
Voice interface
Brainwaves

Example - Virtual Reality:

already popular in games so with more leisure time and a need to fill it / more money may be spent on research and development of this interface / several serious applications already exist (e.g. medical training) and more will be found / increased safety aspects will support research and development costs / is or could be used by the army therefore government funding available / medicine therefore private money from wealthy patients / architecture / public and private funding.

Example - Voice interface:

requires development of AI and natural language / need for improvement in voice recognition software / to allow fluid use comparable to that of a mouse / could then be successful / must overcome problems of accent, idiom, colts / is or could be used by those needing hands free e.g. surgeons, pilots, disabled / could be used where distant control is preferable e.g. bomb disposal

Example - Brainwaves:

lots more research and development required / problems of isolating particular brainwaves / problems of distractions / could be used for severely disabled.

(Award up to [3 marks] for reasoned arguments of each of two interfaces; up to [6 marks]. A further [2 marks] is available for a weighing-up/evaluation of each argument. Total maximum for this part is [8 marks].)

General social significance:

- advantages of speed
- intuitive learning
- increased productivity
- ease of use by young and old

General points affecting success:

- limitations of hardware
- memory
- cost of research and development
- retail cost of end product
- availability to general public
- problems of cloning by other manufacturers

(Total maximum marks for part (c) [12 marks])

T. (a) *(Award [1 mark] for any of the below; up to [3 marks] maximum)*

- fast microprocessors
- large storage capacity
- special input devices such as graphic tablets
- large screen/high resolution monitors

(b) *(Award [1 mark] for each software outlined; up to a maximum of [3 marks] - each one must state what it does; otherwise a total maximum of [1 mark] can be awarded.)*

- digital camera software to capture images
- scanning software to transfer hardcopy images into digital form
- image editing software to edit after initial capture in digital form
- image morphing software to
- 3D-rendering programs to
- photo editing programs to

(c) *(Award up to [3 marks] for explanation of each social significance: economic, legal, historical; up to [9 marks]. A further [3 marks] is available for a weighing-up/evaluation of each impact. Total maximum [12 marks].)*

- computer-generated special effects
 - the use of computer controlled cameras, sound and lights
 - the creation of virtual actors
 - the ability of film studios to utilise telecommunications to employ people from around the world
 - accept other appropriate answers
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