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INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY

Standard Level

Paper 1

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1. **(a)** **Explain *one* reason why parents are more concerned about time spent watching television than time spent on the Internet.** *[2 marks]*

Award [2 marks] for one reason fully explained which includes a reference to the Internet and to television.
Award [1 mark] for a partial explanation which includes only a reference to the Internet or television.

- The Internet is seen as an educational resource, television is seen as entertainment.
- Parents are familiar with the violence associated with watching some television programs, but are not aware of the dangers in using the Internet (racist, pornographic and other undesirable sites)
- Use of the Internet can be controlled by software but television use can generally not be controlled.

Reward other acceptable answers only with the approval of the team leader.

(b) **This survey shows that parents are satisfied with their children using the Internet. However, other surveys have shown that parents are worried about some aspects of the Internet.**

Describe *two* concerns parents may have about their children using the Internet. *[4 marks]*

Award [2 marks] for each concern fully described, up to a maximum of [4 marks].
Award [1 mark] for each partial description.

- access to undesirable Web sites *[1 mark]* and description/reason (*e.g.* terrorist sites, pornographic sites)
- access to games sites *[1 mark]* and description/reason (*e.g.* addiction or wasting time/excessive time) *[1 mark]*
- excessive time on Internet *[1 mark]* and description/reason (*e.g.* interferes with study time) *[1 mark]*
- excessive cost *[1 mark]* and description/reason (*e.g.* high phone bill/download fees) *[1 mark]*
- involvement in illegal activities *[1 mark]* and description/reason (*e.g.* Hacking) *[1 mark]*
- likelihood of downloading a virus/malware *[1 mark]* and consequence/description such as expense of removal *[1 mark]*
- use of chat rooms *[1 mark]* leading to divulgence of personal details / meeting with undesirables *[1 mark]*.

Reward other acceptable answers only with the approval of the team leader.

(c) **Describe *one* action that parents can take to reduce their concerns about the Internet. Evaluate its effectiveness.**   *[4 marks]*

Award [2 marks] for a full discussion of an action. Award [1 mark] for a partial discussion.
Award up to [2 marks] for a full evaluation of the effectiveness of the action. Award [1 mark] for a partial evaluation.

- Action: install filtering software on the home computer *[1 mark]* plus *[2 marks]* for a reason or how it works. Evaluation: limited effectiveness *[1 mark]* and description how it can be circumvented.
- Action: agree/impose a limit on number of hours of use *[1 mark]* and description (*e.g.* arrangement or reason). Evaluation: could be limited *[1 mark]* and description (*e.g.* depends on relationship between parents and children). Action: time limit imposed through ISP *[1 mark]* and description how it is done or reason. Evaluation: very effective *[1 mark]* plus *[1 mark]* and description why it is effective.
- Action: parent can check history trace *[1 mark]* and description how it is done or a reason. Evaluation not effective *[1 mark]* plus *[1 mark]* and description why.

Reward other acceptable answers only with the approval of the team leader.

2. **(a)** **Identify *two* advantages of a client-server network over stand-alone machines.**   *[2 marks]*

Award [1 mark] for each advantage identified up to a maximum of [2 marks].

- security of files from data loss due to the ease of regular backup with a network
- accessibility of files on a server from any computer in the school
- access to shared peripherals/data (*e.g.* colour printer, teaching resources *etc.*)
- allows close monitoring of student activity
- allows communication between clients/co-operative working.

Reward other acceptable answers only with the approval of the team leader.

(b) **Describe *two* different methods that could be used to authenticate users on the network.**   *[4 marks]*

Award [2 marks] for each measure fully described up to a maximum of [4 marks].

- user ID and/or password *[1 mark]* and description regarding access.
- biometric devices *e.g.* iris scan/fingerprint scan *[1 mark]* and description how it works/what it does
- smart cards containing user ID *[1 mark]* and description how it works/what it does.

Reward other acceptable answers only with the approval of the team leader.

(c) **Explain *two* rules that should be included in the school's policy regarding students' use of the network.** *[4 marks]*

Award [1 mark] for a statement of each rule, and [1 mark] for an explanation or reason for each rule, up to a maximum of [4 marks].

Do not accept answers relating to Internet use on the network.

- users must not illegally copy copyright software *[1 mark]* and explanation of the reason (*e.g.* no pirating of commercial software)
- users may not store copyrighted files on the server *[1 mark]* and explanation of the reason (*e.g.* Intellectual property) or example (*e.g.* mp3's)
- users must not load software on the network *[1 marks]* explanation (*e.g.* spread viruses, violate software copyright)
- users must respect the intellectual property of other users *[1 mark]* and example
- users must not use the network to perform illegal activities *[1 mark]* and example (*e.g.* attempt hacking, spread viruses).

Answers must be school related.

Answers must relate to rules - not network settings that students do not control.

Reward other acceptable answers only with the approval of the team leader.

3.   (a)   **Outline *two* advantages of a relational database over a flat file system.**   *[2 marks]*

       Award [1 mark] for each advantage outlined up to a maximum of [2 marks].

       •   avoids data duplication which could result in error
       •   saves space as source data (*e.g.* on clients or employees) is only stored once
       •   makes editing easier (*e.g.* if a client needs to change his address it is only changed in one place).
       •   more flexible by allowing relationships to be made between tables.

       Reward other acceptable answers only with the approval of the team leader.

       (b)   **Describe *two* situations where the legal firm may be worried about the integrity of the data.**   *[4 marks]*

       Award [2 marks] for each situation fully described up to a maximum of [4 marks].
       Award [1 mark] for each partial description.

       •   when a database is shared it could be changed by many people *[1 mark]* and description (*e.g.* inconsistencies could occur).
       •   a hacker could gain illegal access *[1 mark]* and description (*e.g.* change the data).
       •   data is not updated regularly *[1 mark]* and description (*e.g.* difficulty in contacting clients).
       •   data is not verified when entered *[1 mark]* and description (*e.g.* typing errors are made).

       Reward other acceptable answers only with the approval of the team leader.

       (c)   **Describe *two* factors the firm should consider when storing personal information in a database.**   *[4 marks]*

       Award [2 marks] for a full description of each factor up to a maximum of [4 marks].
       Award [1 mark] for each factor which is only identified.

       •   the owner of the information should know what is stored about him *[1 mark]* and description (*e.g.* how this is ensured, owner accessing the information, confirmation mailed to owner)
       •   data should only be used for the purpose for which it was intended *[1 mark]* and description (*e.g.* no data matching, purpose is communicated to the person)
       •   only data relevant to the purpose of the database should be collected *[1 mark]* and description (*e.g.* forms should only ask for relevant data, examples of where this is not done)
       •   people should be able to view data stored about themselves *[1 mark]* and description (*e.g.* how data could be viewed)
       •   personal data should not be sold without the person's permission *[1 mark]* and description (*e.g.* how permission could be obtained, results of selling or sharing information)
       •   data should be kept secure from unauthorized access *[1 mark]* and description (*e.g.* security of the individual, invasion of privacy).

       Reward other acceptable answers only with the approval of the team leader.

**4.   (a)   Outline *two* ways that the copyright of a digital version of an artistic
           or literary work can be violated.   *[2 marks]***

Award [1 mark] for each way outlined up to a maximum of [2 marks].

- a literary, music or artistic work can be illegally digitized and placed on the Internet
- digitized works can be downloaded without the knowledge of the writer or artist
- the digital version of the work can be digitally manipulated without the authors permission
- multiple copies of music CD can be copied using a CD burner.

Reward other acceptable answers only with the approval of the team leader.

**(b)   Describe *two* developments in digital technology that have
       contributed to the increased violation of intellectual property rights.   *[4 marks]***

Award [2 marks] for each development fully described up to a maximum of [4 marks].
Award [1 mark] for each partially described development.

- increased capacity and speed of storage media *[1 mark]* and description (*e.g.* increased capacity and speed of hard disks, CD-ROM and DVD)
- storage of information in standardized formats *[1 mark]* and description (*e.g.* text/rtf. sound/mp3, graphics/jpg – or equivalent file types)
- ease in converting text, music, photos, graphics and art work into digital form *[1 mark]* and description (*e.g.* using scanners, digital cameras, music conversion software to create mp3 files)
- increased speed of transmitting digital information via the Internet, networks or between computers *[1 mark]* and description (*e.g.* increased speed through connections such as ISDN, fiber optic cable, firewire connections)
- the development of peer to peer (P2P) file sharing *[1 mark]* and description how it works.

Reward other acceptable answers only with the approval of the team leader.

**(c)   Describe *one* positive and *one* negative impact on artists or authors
       resulting from digital versions of their work being available on the
       Internet. Do not include any answers from part (a).   *[4 marks]***

Award [2 marks] for a description of one positive and one negative impact on artists to a maximum of [4 marks].
Award [1 mark] for partial description.

Positive impact:
- more music fans can become aware of an unknown musician's works via the Internet *[1 mark]* and description how this happens
- availability of online e-books allows authors to sell their books directly to readers *[1 mark]* and description how the e-book is sold
- an artist can display paintings in digital form for purchase *[1 mark]* and description how the paintings are displayed/sold.

Negative impact:
- musician does not receive any compensation for music which has been freely downloaded from the Internet *[1 mark]* and description of the impact for the musician
- the artist is depressed psychologically by the availability of his work online without his permission *[1 mark]* and description of the impact for the artist (*e.g.* may stop producing his work).

Reward other acceptable answers only with the approval of the team leader.