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MARKSCHEME

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INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY

Standard Level

Paper 1

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1. (a) Which activity shows the largest difference between the ways in which males and females use the Internet? Give an example of this activity. [2 marks]

Award [1 mark] for the activity and [1 mark] for an example.

- Entertainment. This answer only.

Examples:

- online games
- sports information “cruising”
- movies information
- music websites
- celebrity websites.

Reward other acceptable answers. If in doubt, contact your team leader.

- (b) Describe *two* different services on the Internet that may be used by a high school student to help with homework. [4 marks]

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

Award [1 additional mark] for description/example upto a maximum of [2 marks].

- search engine [1 mark] plus description/example [additional 1 mark]
- online encyclopedias/newspapers [1 mark] plus description/example [additional 1 mark]
- chatting to an expert [1 mark] plus description/example [additional 1 mark]
- e-mailing an authority on a subject [1 mark] plus description/example [additional 1 mark]
- online curriculum materials produced by a government body [1 mark] plus description/example [additional 1 mark]
- online discussion forums [1 mark] and reading/posting threads plus description/example [additional 1 mark]
- Subject domain sites e.g. NASA plus description/example [additional 1 mark].

Reward other acceptable answers. If in doubt, contact your team leader.

- (c) Describe *one* positive and *one* negative impact related to teenage use of the Internet for entertainment. **[4 marks]**

Award [2 marks] for a positive impact fully described and [2 marks] for a negative impact up to a maximum of [4 marks].

Reject any answer which does not specifically relate to entertainment on the internet.

Positive impacts

- isolated people make contact with peers **[1 mark]** plus description/example **[additional 1 mark]**
- increased frequency of communication with peers **[1 mark]** plus description/example **[additional 1 mark]**
- access to global entertainment sources **[1 mark]** plus description/example **[additional 1 mark]**.

Negative impacts

- ease of access to undesirable sites **[1 mark]** plus description/example **[additional 1 mark]**
- excessive amount of unproductive time **[1 mark]** plus description/example **[additional 1 mark]**
- ability to make contact with undesirable persons **[1 mark]** plus description/example **[additional 1 mark]**.

Reward other acceptable answers. If in doubt, contact your team leader.

2. (a) **Identify *two* situations where encryption may be used to store data electronically.** [2 marks]

Award [1 mark] for each situation in which the data is clearly identified up to a maximum of [2 marks].

- storage of financial information such as credit card numbers of customers
- storage of commercially sensitive information such as research projects, trade secrets or patents
- storage of sensitive medical data
- storage of bank account information on home computers
- storage of student records and grades by a university
- storage of sensitive military information
- storage of police records about an individual.

Reward other acceptable answers. If in doubt, contact your team leader.

- (b) **Identify *two* situations where encryption may be used when transmitting data electronically.** [2 marks]

Award [1 mark] for each situation in which the data is clearly identified up to a maximum of [2 marks].

- electronic transfer of funds between banks / personal online banking
- transfer of passwords and PIN for automated teller machines
- transfer of credit card numbers for purchases on the Internet
- sending of private business communications between employees
- scrambling cable television signals to prevent reception by people who have not paid
- sending personal e-mail communications
- transfer of medical information between doctor and hospital/doctor and medical specialist.

Reward other acceptable answers. If in doubt, contact your team leader.

- (c) **Describe *three* situations where problems may occur because encryption has not been used and explain the problem.** [6 marks]

Award [1 mark] for each situation in which the data is clearly identified, plus [1 additional mark] for the description of the problem up to a maximum of [6 marks].

- credit card numbers can be stolen from the servers on which they are stored and used for illegal purposes.
- military information which should be secure could be accessed by unauthorized people thereby threatening national security.
- weather forecasting systems could be tampered with causing serious aviation problems
- confidential information being sent by e-mail could be intercepted thereby invading personal privacy.
- medical information could be accessed by unauthorized people thereby invading patients privacy.

Reward other acceptable answers. If in doubt, contact your team leader.

3. (a) Describe *one* way in which the integrity of the data is at risk. [2 marks]

Award [1 mark] for identifying the way in which the integrity of the data is at risk.

- multiple access by all teachers can cause data integrity problems
- allow hacking plus consequence
- allow virus plus consequence (only if not awarded in c)

Award [1 mark] for identifying a data integrity problem resulting from this multiple access.

- any teacher can enter incorrect data
- there is no central control on validity of data.

Reward other acceptable answers. If in doubt, contact your team leader.

(b) Describe *two* procedures that the network administrator can use to ensure the reliability of the backups. [4 marks]

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

Award [1 mark] for each partial description.

- creating backups [1 mark] plus reason/method (e.g. using grandfather, father, son)[1 additional mark]
- attempting to restore the backup [1 mark] plus reason/method [1 additional mark]
- checking reliability of backup media [1 mark], plus reason/method [1 additional mark]
- verifying that the backup is an exact copy of the original [1 mark] plus reason/method [1 additional mark].
- checking that backup contains no malicious code [1 mark], plus reason/method [1 additional mark].

Reward other acceptable answers. If in doubt, contact your team leader.

(c) Describe *one* way that a breach of security could occur and discuss its impact. [4 marks]

Award [1 mark] for identifying a breach of security plus [1 additional mark] for how it occurred.

Award [1 mark] for identifying an impact and [1 additional mark] for a resulting consequence.

- (breach) hackers penetrate the database [1 mark] by (method) stealing passwords [1 additional mark].
- (impact) data integrity is lost [1 mark] plus additional consequence [1 additional mark].
- (breach) a teacher provides data to a third party [1 mark] by (method) copying data from the database [1 additional mark].
- (impact) student's privacy is invaded [1 mark] plus additional consequence [1 additional mark].

Reward other acceptable answers. If in doubt, contact your team leader.

4. (a) Describe *one* method that can be used to control the Internet services and Web sites available to the Chinese people. [2 marks]

Award [1 mark] for identifying a restriction (software, hardware, or policy) plus [1 additional mark] for description/example.

Maximum [2 marks] for this question.

- policy - restrict number of IPs [1 mark] and description/example [1 additional mark]
- configure restrictive access through IP services (router) [1 mark] and description/example [1 additional mark]

Reward other acceptable answers. If in doubt, contact your team leader.

- (b) Describe *two* social impacts which this growth could have on Internet shopping. [4 marks]

Award [1 mark] for each impact on internet shopping identified, up to a maximum of [2 marks].

Award [1 additional mark] for description/example upto a maximum of [2 marks].

- increased Internet shopping [1 mark] plus description/example [1 additional mark]
- increase in the availability of goods which would appeal to the Chinese people [1 mark] plus description/example [1 additional mark].
- online methods of payment made easily available to the Chinese people [1 mark] plus description/example [1 additional mark].
- increase in online advertising in the Chinese language [1 mark] plus description/example (e.g. Chinese people are more aware of goods) [1 additional mark].
- online support and advice for shoppers from companies in the Chinese language [1 mark] plus description/example [1 additional mark].
- increase in goods purchased from Chinese e-commerce sites by the rest of the world [1 mark] plus description/example (e.g. resulting in increased income for Chinese people) [1 additional mark].

Reward other acceptable answers. If in doubt, contact your team leader.

- (c) Describe *two* benefits to China from the increased use of the World Wide Web by the Chinese people. Do not include answers from part (b). **[4 marks]**

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

Award [1 additional mark] for description/example up to a maximum of [2 marks].

- increase in the number of Web sites available in Chinese **[1 mark]** and description/example **[1 additional mark]**
- increased availability of online Chinese-English Web site translation facilities **[1 mark]** and description/example **[1 additional mark]**
- greater awareness through the Internet of the Chinese culture, history and way of thinking **[1 mark]** and description/example **[1 additional mark]**
- greater availability of Western resources and information to the Chinese people **[1 mark]** and description/example **[1 additional mark]**
- Increased sales revenue **[1 mark]** and description/example **[1 additional mark]**.

Reward other acceptable answers. If in doubt, contact your team leader.
