MARKSCHEME

May 2006

INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY

Higher and Standard Level

Paper 1

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General marking principles

- All marking should be in red.
- Every page should show evidence of being marked. If there is nothing creditworthy on a page, there should be some mark such as a wavy line to indicate that it has been seen.
- Write a sub total mark in the margin against each part question.
- The total mark for each question should be placed in the margin at the end of the question and ringed.
- Place a tick for each point credited at the place where the answer gains credit.
- The number of ticks must match the sub totals in the margin.
- On the front cover, indicate the questions 1 – 4 in the candidate question column.
- Enter the total for each question in red in the 'Examiner' column.
- Enter the question paper total at the bottom of the 'Examiner' column.

Annotation of scripts

Scripts should be annotated to indicate how certain decisions have been made. Use the following codes only to support judgements:

Annotation	Meaning
BOD	Marginal point - benefit of doubt given
JE	Just enough
NAQ	Not answered question
NBOD	Marginal point – benefit of doubt not given
NE	Not enough
OC	Off course
R	Repetition
TV	Too vague

1.   (a)   Identify *two* ways in which photo editing software can be used to create a photo of a situation that never existed.   *[2 marks]*

Award [1 mark] for each method which is clearly identified up to a maximum of [2 marks].

- Superimposition idea: e.g. two or more original photos to appear as one and create a fictitious situation
- editing / alteration of existing image: e.g. add/erase information.

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

(b)   Describe how such photographs might be verified for their authenticity.   *[4 marks]*

Award [1 mark] for each method clearly identified up to a maximum of [2 marks].
Award [1 additional mark] for the description of the reason up to a maximum of [2 additional marks].
Alternatively, a candidate can achieve full marks for one reason, which is then described in more detail.

- add authentication code to image file *[1 mark]* check this against known source *[1 additional mark]*
- add additional data about the picture *[1 mark]* compare with the appearance of the image *[1 additional mark]*
- software to tell if image has been altered *[1 mark]* detects if changes made since original photo taken *[1 additional mark]*
- biometric data stored at same time as photo taken *[1 mark]* compared with data from suspected fraudster *[1 additional mark]*
- attempting to locate the original source *[1 mark]* by typing keywords in an Internet search engine *[1 additional mark]*
- open in a photo editing program *[1 mark]* to look for evidence of merging of more than one photo *[1 additional mark]*
- contact the institution or person photographed *[1 mark]* to verify the truth of the situation *[1 additional mark]*
- inconsistencies in photograph *[1 mark]* example such as colours / shadows / pixellation / resolution / logic (item in photo that couldn't be there in reality) *[1 additional mark]*.

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

(c)   **Discuss how the enhancement of digitally produced photographs may be misused**.

[4 marks]

Award [0 marks] inappropriate answer.
Award [1 to 2 marks] limited discussion and basic understanding. If the factor/ factors are
identified but no discussion takes place, award only *[1 mark]*.
Award [3 to 4 marks] Relevant factor/ factors are recognised and developed in depth. For four
marks an expression of opinion/ likelihood/ consequence must be included.

*N.B. To gain any marks, the answer must focus on <u>identified</u> example / examples of **misuse**.
Answers which are generalised or only refer to methods of photo manipulation score zero.*

Answers may include:
- false enhancements to advertisements
- for political gain
- to malign someone
- embarrass a person for humorous reasons
- falsely claiming that a photograph is your own.

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

2.   **(a)**   **Identify** *two* **technological developments that have led to the widespread use of wireless networks**.   *[2 marks]*

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

- Laptop with wireless LAN connectivity (wireless port, wireless PCMCIA, wireless interface card)
- PDA with a wireless connection, (e.g. Bluetooth, Flash cards)
- Bluetooth
- mobile phones with network connection capabilities / WAP
- development of personal portable computing devices
- development of wireless communication technology
- development of robust network software (including security).

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

(b)   **Describe** *two* **benefits of this service for users**.   *[4 marks]*

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

- Mobility: available anywhere with their own computer *[1 mark]* user can access the information in the LAN sitting in a café / not restricted to employee's desk *[1 additional mark]*
- less need to install cables *[1 mark]* office setup can be rearranged at will as there are no cables physically restricting the movement of desks to accommodate new employees *[1 additional mark]*
- no need to pay for personal ISP *[1 mark]* use of public service provides free access to the LAN, Internet/email *[1 additional mark]*.

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

(c) **Certain files available to users of the wireless LAN may by particularly sensitive or confidential**.

Discuss how the administrator of a wireless LAN could protect specific files on this network from unauthorized access. *[4 marks]*

Award [0 marks] inappropriate answer.
Award [1 to 2 marks] limited discussion and basic understanding. If the factor/ factors are identified but no discussion takes place, award only *[1 mark]*.
Award [3 to 4 marks] relevant factor/ factors are recognised and developed in depth. At the top end an expression of opinion/ likelihood/ consequence is provided.

Factors may include:
- install a firewall
- using logons and passwords on the files concerned
- use of encryption
- blocking specific ports on router.

Discussion points may include:
- prevention of unauthorised access to the file by checking IP addresses
- access levels
- use of keys

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

3. **(a)** **Identify** *two* **technological requirements for people to use Internet telephony**. *[2 marks]*

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

- headset
- microphone
- VOIP / software that connects caller and person called
- high speed / broadband Internet connections
- analogue to digital input/output devices
- personal computing devices (accept computer)
- sound card
- compression software
- accelerator cards.

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

(b) **Describe** *one* **advantage for individuals who use Internet telephony compared with using a conventional telephone service**. *[2 marks]*

Award [1 mark] for an advantage identified [1 mark].
Award [1 additional mark] for the description of the advantage.

- reduced cost *[1 mark]* no extra cost apart from regular Internet connection cost whereas a regular phone call is charged per call *[1 additional mark]*
- text messaging can be done simultaneously *[1 mark]* which can be printed whereas a regular phone call is voice only *[1 additional mark]*
- record of calls made *[1 mark]* details stored on own computer of date/ time / user called / length *[1 additional mark]*.
- calls can be made from any connected computer *[1 mark]* no problems with calling different numbers according to location *[1 additional mark]*.

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

(c) **Describe one disadvantage for individuals who use Internet telephony compared with using a conventional telephone service**. *[2 marks]*

Award [1 mark] for a disadvantage identified [1 mark].
Award [1 additional mark] for the description of the disadvantage.

- computer must be switched on *[1 mark]* unlike the telephone which rings to alert you to a call
- potential invasion of privacy *[1 mark]* digital data is more subject to unauthorised access compared with the analogue telephone *[1 additional mark]*
- sender and receiver must have VOIP software and be registered as users *[1 mark]* telephones are more common in homes than computers *[1 additional mark]*.

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

(d) **Discuss how developments in Internet telephony might affect the nature of the services offered by conventional and mobile phone (cell phone) providers**. *[4 marks]*

Award [0 marks] inappropriate answer.

Award [1 to 2 marks] limited discussion and basic understanding. If the factor/ factors are identified but no discussion takes place, award only *[1 mark]*.

Award [3 to 4 marks] relevant factor/ factors are recognised and developed in depth. At the top end an expression of opinion/ likelihood/ consequence is provided.

N.B. This question is about the nature of services, <u>not costs</u>.

Answers may include:
- One number for an individual / no distinction between land line and mobile devices
- mobile networking services
- televoting services
- one bill for all telecom's services
- any other technologically feasible suggestion.

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

4. **(a)** **Identify two types of crime that are associated with the widespread use of IT**.
[2 marks]

There are endless possibilities for this question. Marking principle: award marks for crimes that are distinct and feasible. The answers must clearly be IT related.

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

Answers may include:
- Phishing or description
- hacking or description
- identity theft
- coordination of criminal activity or terrorism
- disseminating viruses
- denial of service
- credit card fraud
- fraudulent selling from web sites
- cyber bullying / harassment
- any copyright issue (must clearly indicate an IT situation)

Reward acceptable answers with the approval of the team leader.

(b) **Describe *two* pieces of advice that a bank can give to customers to help them avoid such dangers**.
[4 marks]

Award [1 mark] for each piece of advice identified up to a maximum of [2 marks]
Award [1 additional mark] for additional comments / reasons up to a maximum of [2 additional marks].

- Don't disclose PIN / passwords / other details over the web *[1 mark]* the bank never requests this via email *[1 mark].*
- Report scams *[1 mark]* by forwarding suspicious emails to the bank / other competent organisation *[1 additional mark].*
- Don't click links in emails *[1 mark]* type in the known URL in the browser address bar *[1 additional mark].*
- Look for evidence of site security *[1 mark]* such as padlock or https *[1 additional mark].*
- *Evidence of verification [1 mark] such as Veri sign [1 additional mark].*

Reward acceptable answers with the approval of the team leader.

(c) **Discuss how it may be possible for a bank to become aware of fraudulent transactions taking place in its customers' accounts**.   *[4 marks]*

Award [0 marks] inappropriate answer.
Award [1 to 2 marks] limited discussion and basic understanding. If the factor/ factors are identified but no discussion takes place, award only *[1 mark]*.
Award [3 to 4 marks] relevant factor/ factors are recognised and developed in depth. At the top end an expression of opinion/ likelihood/ consequence is provided.

- unusual transactions
- software to detect this
- transactions from countries other than customer's residence
- customer complains
- serious overdraft.

Reward acceptable answers with the approval of the team leader.