



**INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY
HIGHER LEVEL
PAPER 2**

Friday 14 November 2008 (morning)

2 hours

INSTRUCTIONS TO CANDIDATES

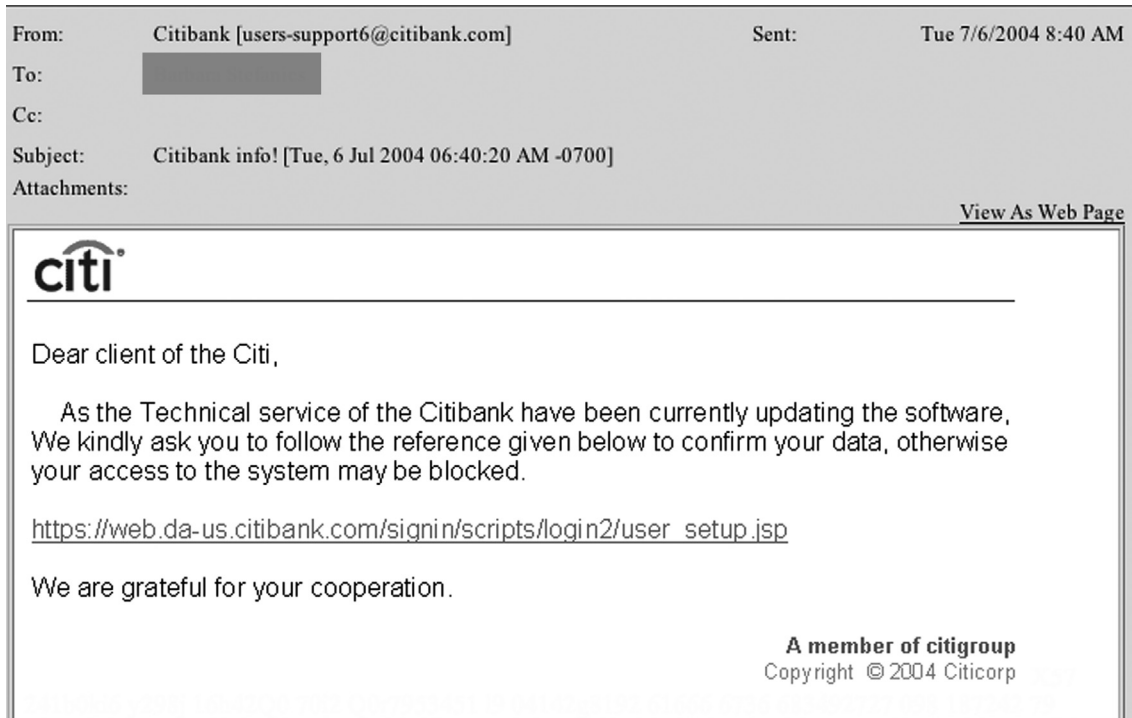
- Do not open this examination paper until instructed to do so.
- Answer three questions.

Answer **three** questions.

Area of impact: Business and employment

1. Bank customers can access their bank accounts through an Automatic Teller Machine (ATM) or by using online banking services. However, both methods of access have the risk that criminals could gain unauthorized access to their bank account details.

A *Citibank* customer received the following e-mail. This is an example of phishing, the practice of trying to find out customers' bank account information through fraudulent e-mails.



[This image did not originate from *Citibank*]

- (a) Identify **two** ways that this e-mail could trick *Citibank* customers into providing sensitive information. [2 marks]
- (b) Describe the steps used by the bank's IT system to authorize a customer's access to their bank account when using a card at an ATM. [4 marks]
- (c) Explain **two** actions that could be taken by the bank to assist customers in identifying fraudulent e-mails. [4 marks]
- (d) To what extent have ATMs **and** online banking changed the way that people manage their finances? [10 marks]

Area of impact: Arts, entertainment and leisure / Education

2. Increasingly, news and information is available on the World Wide Web through video and audio files. The screenshot below shows how news on the *BBC* web site is delivered in a wide variety of formats.

Image removed for copyright reasons

- (a) (i) Identify **one** file format suitable for the storage of audio files. *[1 mark]*
- (ii) Identify **one** file format suitable for the storage of video files. *[1 mark]*
- (b) Describe **two** concerns that schools may have about students being able to download and view videos on the school network. *[4 marks]*
- (c) Explain why many news web sites use podcasts as a method for presenting news items. *[4 marks]*
- (d) With recent developments in technology, teachers are using a wider range of online learning resources. To what extent can these developments improve the study of news events by students? *[10 marks]*

Area of impact: Science and the environment

3. With changes in the world’s weather, more extreme events are occurring. If the magnitude of, and areas affected by these events can be predicted, action can be taken to reduce the damage. It is possible to predict many of these events by using data initially collected at weather stations. This data is then transferred and added to a weather database and can be used in computer models and simulations.

By collecting weather data over long periods of time, the climate of these locations can also be established. Computers can be used to map the current weather patterns against the climate to see whether the climate is changing. From this information, governments can take action to cope with future climate changes such as by improving current flood defences.

- (a) Identify **two** ways that data collected in a weather station could be transferred to the weather database. *[2 marks]*

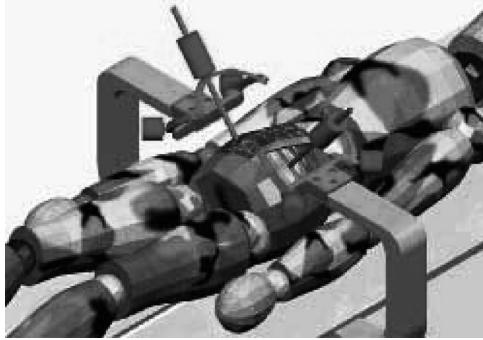
- (b) Describe the differences between a computer model and a computer simulation. *[4 marks]*

- (c) Explain why the path of a hurricane may not match the prediction from the computer simulation. *[4 marks]*

- (d) Evaluate how the use of different IT systems could help a country prepare against natural disasters. *[10 marks]*

Area of impact: Politics and government / Health

4. In the future it might be possible to perform life-saving operations on the battlefield by using a remotely-controlled robot. This would allow doctors to perform surgery from a distance. This robotic system could be portable enough to travel with troops into war zones in the back of an armored vehicle. The cost of this system is likely to exceed US\$10 million.



The image above shows that the robot could consist of two arms that reach over a wounded soldier. The robot could then be remotely controlled by a surgeon and would take the wounded soldier's blood pressure, temperature and pulse. After any necessary medical treatment, the soldier would be transported by helicopter to safe military medical facilities.

Immediate medical treatment is one of the most important factors in saving a wounded soldier's life on the battlefield.

[Reprinted with permission.]

- (a) Identify **two** input devices that could allow details of the soldier's medical condition to be determined and communicated electronically to the doctor. *[2 marks]*
 - (b) Describe **two** factors that influence the reliability of sending information between the robot in the battlefield and the surgeon. *[4 marks]*
 - (c) Explain why governments may fund the development of remotely-controlled robots of this type for non-military purposes. *[4 marks]*
 - (d) A hospital is planning to implement remotely-controlled robots in local health clinics. Evaluate the issues involved in coming to this decision. *[10 marks]*
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