IB DIPLOMA PROGRAMME
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22065515

INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY
STANDARD LEVEL
PAPER 2

Tuesday 16 May 2006 (morning)

2 hours

INSTRUCTIONS TO CANDIDATES

- Do not open this examination paper until instructed to do so.
- Section A: answer all parts of the question.
- Section B: answer two questions.

SECTION A

*Answer **all** parts of the question.*

Area of Impact: Business and Employment

1.   In 2003, 42.2 million Americans booked their travel online (Greenspan 2004).

   (a)   Describe the meaning of the term URL in the context of online travel.   ***[2 marks]***

   (b)   Describe **two** different ways that IT could be used to authenticate a passenger's
          identity when boarding a plane.   ***[4 marks]***

   (c)   Describe **two** advantages of Internet access for a travel agent when making customer
          bookings.   ***[4 marks]***

   (d)   Passengers are often worried about booking travel online.

          Discuss privacy, security and reliability concerns when passengers book their trips
          online. Evaluate these concerns.   ***[10 marks]***

Reference:

Greenspan, R. 2004, *Internet high on travel destinations,* http://www.clickz.com/stats/markets/travel/article.php/3304691 [17 July 2004]

SECTION B

*Answer **two** questions.*

Area of Impact: Education

2. Lakeside International High School has a computerised library catalogue and borrowing system. Students can access the catalogue from inside the library or via the school's Intranet.

    (a) Identify **three** tables that could be part of the library's relational database. *[3 marks]*

    (b) The librarian needs to produce a list of drama books that Year 12 students have not returned on time. Describe the query needed. *[3 marks]*

    (c) Describe **two** policies that should be implemented for backing up the library's data. *[4 marks]*

    (d) Discuss **three** advantages of this computerised school library system compared with a manual system. Evaluate these advantages. *[10 marks]*

Area of Impact: Health

3. In many hospitals around the world, surgeons are performing surgery with the assistance of robots. Robot surgery has been taken a step further with surgeons being able to use remote-controlled robots to perform surgery on patients thousands of miles away (Scheeres 2001).

Source: [BBC News 2002]

(a) Identify **one** input and **one** output device used in robotic surgery.   *[2 marks]*

(b) Describe **one** capability and **one** limitation of the robot when used in surgery.   *[4 marks]*

(c) Describe **two** extra features that would be needed for the robot in surgery to be described as an expert system.   *[4 marks]*

(d) Discuss **one** economic concern, **one** reliability concern and **one** other concern for patients undergoing robotic surgery. Evaluate the significance of these concerns.   *[10 marks]*

References:

BBC News, 2002, *Robots may carry out heart surgery, http://news.bbc.co.uk/2/hi/uk_news/england/2221041.stm* [18 July 2004]

Intuitive Surgical, 2003, http://www.computermotion.com/surgical_team/index.html [11 Sep 2004]

Scheeres, J. 2001, *Surgeons here, patient there,* http://www.wired.com/news/medtech/0,1286,46946,00.html [18 July 2004]
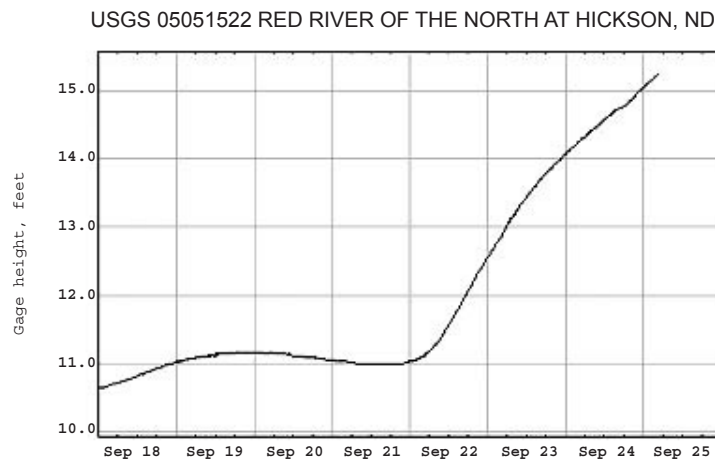
Area of Impact: Arts, entertainment & leisure

4. The huge growth in the number of games that use Information Technology has meant that IT based gaming has become an important leisure activity.

    (a) Identify **two** different personal IT devices that support games. Do **not** answer this question using only brand names. *[2 marks]*

    (b) Explain **two** health problems that could arise from excessive interaction with computerised games. *[4 marks]*

    (c) Describe **two** situations where the convergence of **two** technologies has led to the development of computerised games. *[4 marks]*

    (d) Discuss **one** positive effect on social relationships and **two** negative effects on social relationships caused by the playing of computerised games. Evaluate these effects. *[10 marks]*

Area of Impact: Science and the environment

5. The US Geological Survey (USGS) provides environmental data to the public on their website. One service it offers is data about the water levels in rivers. Monitoring stations are set up along the rivers to collect data about water levels. This data is transmitted back via a satellite link to a central location where a database is constantly maintained.

Real-time data can be downloaded as a graph or as a table of figures in tab separated format.

USGS 05051522 RED RIVER OF THE NORTH AT HICKSON, ND

Source: [http://waterdata.usgs.gov/nd/nwis/current/?type=flow]

(a) Describe **one** advantage of obtaining the data as a table of figures in tab separated format. *[2 marks]*

(b) Explain the purpose of **two** items of hardware that are required at the sampling stations along the rivers. *[4 marks]*

(c) Explain the use of **two** other items of physical data that can be collected by the data logging stations along the rivers. *[4 marks]*

(d) In the past, data about rivers was collected manually.

Discuss **two** advantages and **one** concern for the USGS using automatic monitoring systems along the rivers and then entering the information into a centrally located database. Evaluate these issues. *[10 marks]*

Area of Impact: Politics and government

6.   Some European countries are experimenting with e-voting, which allows voters to cast their votes via electronic voting machines or from their PCs.

    (a)   Identify **two** items of information that a home user would need to have in order to vote using a computer from home.   *[2 marks]*

    (b)   Explain the purpose of **one** item of hardware and **one** item of software that would be required, in addition to a PC, for online voting.   *[4 marks]*

    (c)   Describe **two** reasons why the result of an election that included e-voting may not be trusted.   *[4 marks]*

    (d)   Discuss **three** advantages of e-voting. Evaluate these advantages.   *[10 marks]*