



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

Monday 19 November 2007 (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. A food store uses a relational database to manage the sale of its food products. This database contains a table named PRODUCT, which contains information about each product in the store.

Each food item in the store carries a label on which is printed a bar code. When an item is sold, the bar code of the item is scanned and the cost of the item is added to the customer's bill.



Customers can receive a loyalty card by providing their name, address and email address to the store. They receive points whenever they make a purchase. These points can be used to obtain discounts on future purchases.

- (a) Identify **two** fields that would be required in the PRODUCT table. [2 marks]
- (b) Describe how the cost of each item is obtained after the bar code of each item is scanned. [4 marks]
- (c) Explain how errors could occur on the customer's bill. [4 marks]
- (d) Discuss reasons why customers may be uncomfortable with the use of loyalty cards. [10 marks]

Area of impact: Science and the environment

2. The Basel Action Network (BAN) has discovered that large quantities of obsolete computers, mobile phones and other used electronic equipment have been exported from the USA and Europe to Lagos, Nigeria. The hard drives of the discarded computers often contained personal information that was not removed by their previous owners.

Instead of being reused, this “donated” equipment ended up being burned near residences in empty lots or dumped in swamps. Both actions result in serious health and environmental concerns.

[Source: <http://www.ban.org/BANreports/10-24-05/documents/PressRelease.pdf>]

- (a) Identify **two** methods that could be used to ensure that all files from the hard disks of the donated computers cannot be read. *[2 marks]*

- (b) Describe **two** specific kinds of toxic material contained in computer hardware and their effects on health or the environment. *[4 marks]*

- (c) Explain why developing countries may accept the donation of obsolete computer hardware from developed countries. *[4 marks]*

- (d) Discuss actions that may be necessary to ensure the successful implementation and long-term usability of the donated computers. *[10 marks]*

Area of impact: Politics and government / Education

3. Laptop computers costing \$ 100 will be offered directly to governments of developing countries with the hope that they will distribute them to children. They will not be sold commercially.

The laptops will be more durable and simpler than commercial laptops. The \$100 laptops will have fewer moving parts inside and use solid-state secondary storage instead of hard disks. The battery will be charged by turning a crank so that one minute of winding will result in 40 minutes of battery power. The display will use one tenth of the power used by the LCD displays on conventional laptops. The \$100 laptops will run at 500 MHz with 1 GB of memory. They will have four USB ports for peripheral devices and built-in wireless networking.

It is planned that the laptops will run open source software for their operating system and applications.



[Source: http://news.com/i/ne/p/photo/laptopcrank_550X384.jpg]

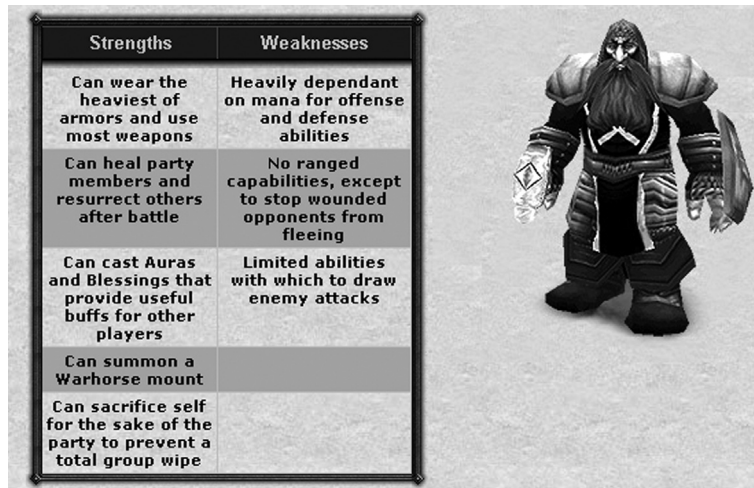
- (a) Identify **two** advantages of using solid-state secondary storage in the \$100 laptops instead of a conventional hard disk. *[2 marks]*
- (b) Describe **two** language-related problems that must be solved in the development of the \$100 laptops in order to make them usable in different countries. *[4 marks]*
- (c) Explain the reasoning behind the decision to use open source software on the \$100 laptops instead of commercial software. *[4 marks]*
- (d) Discuss why governments in developing countries would want to distribute the \$100 laptops to every child. *[10 marks]*

Area of impact: Arts, entertainment and leisure / Health

- 4. The World of Warcraft is a Massively Multiplayer Online Game (MMOG). This fantasy game has 7 million users and many of them pay \$ 15 a month to play. China and other areas in the Far East sell access cards that even allow users to pay by the minute. In less than two years, World of Warcraft has generated more than \$1 billion in revenue. World of Warcraft has shown that a large global audience is prepared to pay for online access to a digital game.

There have been other successful MMOGs in the past. However, The World of Warcraft has far exceeded all expectations. Players use characters called Avatars to follow quests, join guilds, fight monsters, collect useful items and become more powerful characters in the process.

Many companies and individuals have gained financially from the success of MMOGs. For example, *Coca-Cola* has put World of Warcraft figures on 600 million Coke cans in China thereby promoting extra sales. There are also hats, T-shirts, a board game, novels and movies based on the MMOGs.



[Source: <http://www.worldofwarcraft.com/info/classes/paladin/>]

- (a) Identify **two** ways that individuals can make a payment in order to play online digital games. [2 marks]
- (b) MMOGs involve high quality sound, high resolution graphics, quick-moving animation and video. Describe the specifications of a home computer system that would provide the player with the best game playing enjoyment. [4 marks]
- (c) Explain how MMOGs demonstrate that digital information can have economic value. [4 marks]
- (d) Discuss the possible consequences that online games have on players. [10 marks]