

# **MARKSCHEME**

**NOVEMBER 2005**

## **INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY**

**Standard Level**

**Paper 1**

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1. (a) Identify *two* peripherals, other than printers, that could be connected to the LAN. **[2 marks]**

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

- scanner
- webcam
- fax machine
- plotters
- CD-ROM tower
- DVD tower
- modem
- network capable photocopier
- interactive whiteboard
- projector.

*Do not accept digital camera.*

*Do not accept answers, which identify peripherals accessed only from a local computer.*

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

- (b) Describe *two* advantages of having a network of computers in the office instead of several stand-alone computers. **[4 marks]**

*Award [1 mark] for each advantage that is clearly identified up to a maximum of [2 marks].*

*Award [1 additional mark] for the further description or consequence of each advantage up to a maximum of [2 additional marks].*

*Identification of the advantage [1 mark] and further description [1 additional mark]*

- share data files across the network **[1 mark]**  
*description (e.g. time efficiency) [additional 1 mark]*
- share peripherals **[1 mark]**  
*description (e.g. cutting costs of buying peripherals, maximizing use of peripherals) [1 additional mark]*
- use networked versions of software **[1 mark]**  
*description (e.g. cutting costs of software, consistency of workers accessing common versions of software and/or applications/ease of performing upgrades) [1 additional mark]*
- work collaboratively on the same files **[1 mark]**  
*description (e.g. improving efficiency) [1 additional mark]*
- monitor use/abuse by recording network access by users **[1 mark]**  
*description (e.g. improving efficiency of office workers by record keeping, identify potential unauthorized access and problems) [1 additional mark]*
- capability to filter incoming data on server **[1 mark]**  
*description (e.g. save time and cost by protecting the network instead of installing filtering software on individual stand-alone computers) [1 additional mark].*
- central control **[1 mark]**  
*description (e.g. unlocking blocked accounts or other maintenance) [1 additional mark].*
- messaging / communication **[1 mark]**  
*description (e.g. can log on from any station, flexible and efficient) [1 additional mark].*

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

- (c) Describe *two* ways in which a network administrator could protect the computers in the network against virus attack. **[4 marks]**

*Award [1 mark] for each way that is clearly identified up to a maximum of [2 marks]. Award [1 additional mark] for further description of each way up to a maximum of [2 additional marks].*

Identification of the way **[1 mark]** and further description **[1 additional mark]**

- installing anti-virus software on all computers **[1 mark]**  
*description* (e.g. regularly updating) **[1 additional mark]**  
*Do not accept brand name for second mark.*
- installing network software that strips executable files from email attachments **[1 mark]**  
*description* (e.g. viruses are often spread through executable files attached to emails) **[1 additional mark]**
- controlling access permissions **[1 mark]**  
*description* (e.g. using network login to restrict users' access to other parts of the network so viruses are not spread) **[1 additional mark]**
- preventing users downloading files from the Internet **[1 mark]**  
*description* (e.g. many viruses are hidden in downloaded files) **[1 additional mark]**
- locking or disabling the access to disk drives or CD-ROM drives or USB ports or installing client machines with no floppy drives **[1 mark]**  
*description* (e.g. users cannot use floppy disks or other external media and so not introduce viruses from home or other sources) **[1 additional mark]**
- installing a firewall **[1 mark]**  
*description* (e.g. blocks suspect sites) **[1 additional mark]**
- introduce appropriate procedure / a code of conduct **[1 mark]**  
*description* (e.g. identify possible methods) **[1 additional mark]**.  
*Do not accept brand name for second mark.*

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

2. (a) (i) **Identify this formula.** [1 mark]

*Award [1 mark] for identifying the formula.*

=D12\*\$C\$6

=\$C\$6\*D12

=D12\*C\$6

=C\$6\*D12

*Do not accept \$ used with D12 (e.g. \$D12, D\$12 or \$\$12).*

(ii) **State one advantage of an absolute cell reference over a relative cell reference.** [1 mark]

*Award [1 mark] for an advantage of an absolute cell reference over a relative cell reference.*

- an absolute cell reference does not change and a relative cell reference can change when a fill down (or fill right) command is used
- an absolute cell reference allows the specific row and/or column to be referred to when copying and pasting information to other cells.

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

(b) **Identify two ways in which the integrity of the Outback Tours spreadsheet could be at risk and outline a solution for each.** [4 marks]

*Award [1 mark] for clearly identifying each way the integrity could be at risk up to a maximum of [2 marks].*

*Award [1 additional mark] for outlining each solution up to a maximum of [2 additional marks].*

*Identification of the way [1 mark] and outline a solution [1 additional mark]*

- multiple copies of the spreadsheet could exist on individual computers [1 mark]  
*solution* (e.g. networking the computers and using one copy on the server for access by all office workers) [1 additional mark]
- unauthorized users could access the spreadsheet and make changes [1 mark]  
*solution* (e.g. securing the location/securing access with passwords) [1 additional mark]
- the spreadsheet is compromised by a virus [1 mark]  
*solution* (e.g. installing anti-virus software on each machine including the server) [1 additional mark].

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

- (c) Describe *two* advantages for Outback Tours of using an electronic spreadsheet over a manual paper system. **[4 marks]**

*Award [1 mark] for clearly identifying each advantage up to a maximum of [2 marks].*

*Award [1 additional mark] for a description of the comparison of the use of a spreadsheet with a manual paper system up to a maximum of [2 additional marks].*

Advantages must be relevant to the Outback Tours spreadsheet.

*Identification of the advantage [1 mark] and further description [1 additional mark].*

- recalculations are automatic when changes are made in a spreadsheet **[1 mark]**  
*comparison* (e.g. hand recalculations or a calculator would be necessary on paper) **[1 additional mark]**
- spreadsheet can be easily updated **[1 mark]**  
*comparison* (e.g. editing in paper system by hand is time-consuming) **[1 additional mark]**
- spreadsheet can be easily shared electronically in their original file format **[1 mark]**  
*comparison* (e.g. paper files would have to be scanned in order to be sent electronically or would be sent by post) **[1 additional mark]**
- spreadsheet can be used for modelling **[1 mark]**  
*comparison* (e.g. “What if” scenarios can be easily implemented in a spreadsheet, but would require new calculations on paper) **[1 additional mark]**
- spreadsheet can be used for immediate charting of data **[1 mark]**  
*comparison* (e.g. creating charts on paper is time-consuming) **[1 additional mark]**
- generate statistical analysis **[1 mark]**  
*comparison* (e.g. manual analysis time consuming) **[1 additional mark]**
- data from a spreadsheet is easily transferred electronically between applications (e.g. presentation, reports) **[1 mark]**  
*comparison* (e.g. data from paper is only transferable by rewriting the data) **[1 additional mark]**
- data in a spreadsheet is easily searched and/or sorted **[1 mark]**  
*comparison* (e.g. data recorded on paper has to be searched and/or sorted manually which is time consuming) **[1 additional mark]**
- easy to generate reports from spreadsheets quickly and in different formats **[1 mark]**  
*comparison* (e.g. paper data has to be rewritten in different formats) **[1 additional mark]**
- spreadsheet can be saved as a template **[1 mark]**  
*comparison* (e.g. no need to set up new calculations from the beginning) **[1 additional mark]**
- easy to make backups **[1 mark]**  
*comparison* (e.g. data is more secure) **[1 additional mark]**.

*Do not accept that spreadsheets save paper or require less storage space. Both of these conclusions are vague and only relevant in specific situations.*

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

3. (a) Identify *two* different browsing activities that could be collected from a cookie by a website. **[2 marks]**

*Award [1 mark] for identifying each browsing activity that would be collected by a cookie up to a maximum of [2 marks].*

- the cookie is used to send information regarding the frequency that websites were visited
- the cookie indicates the order in which the various pages on a website are accessed
- the cookie records the length of time the user stays on a webpage
- the cookie records all the sites that were visited
- the cookie can collect a user's name / password to the site (the user does not have to re-enter it on next visit).

- (b) Describe *one* advantage of a cookie for the owner of the website and *one* advantage for a person accessing the website. Include one practical example in each description. **[4 marks]**

*Award [1 mark] for each advantage identified (one for the owner and one for the person accessing the website) up to a maximum of [2 marks].*

*Award [1 additional mark] for a description of each advantage up to a maximum of [2 additional marks].*

*Identification of the advantage [1 mark] and further description [1 additional mark]*  
*Advantages for the owner of the web site visited:*

- a web site can tailor a page to a visitor's needs **[1 mark]**  
*description* (e.g. personal service possible based on previous visit(s))  
**[1 additional mark]**
- a web site can target advertising to the visitor **[1 mark]**  
*description* (e.g. more focussed marketing based on previous visit(s))  
**[1 additional mark]**
- a web site can collect information about the visitor **[1 mark]**  
*description* (e.g. can be used for statistical analysis/development of the web site)  
**[1 additional mark]**
- the ability to adjust stock **[1 mark]**  
*description* (e.g. to suit information obtained from cookies) **[1 additional mark].**

*Advantages for the person accessing the website:*

- a cookie might store a password for a particular site **[1 mark]**  
*description* (e.g. saving time when you next login) **[1 additional mark]**
- a cookie might store details of a partially filled "shopping basket" **[1 mark]**  
*description* (e.g. the customer can continue with purchases next session)  
**[1 additional mark]**
- a cookie may store preferences **[1 mark]**  
*description* (e.g. a site can include relevant specials when the customer logs in the next time) **[1 additional mark]**
- the user can control the use of cookies stored on their hard disk **[1 mark]**  
*description* (e.g. by deleting or turning off cookies in the browser)  
**[1 additional mark].**

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

- (c) **Describe *two* concerns that a person accessing the website may have about the use of cookies.** **[4 marks]**

*Award [1 mark] for identifying each concern up to a maximum of [2 marks].*

*Award [1 additional mark] for a description of each concern up to a maximum of [2 additional marks].*

*Do not accept any answers concerning malicious acts or viruses.*

*Do not accept answers that imply that the cookie is stored on a remote machine.*

*Identification of the concern [1 mark] and further description [1 additional mark]*

- privacy of the user is a concern **[1 mark]**  
*description* (e.g. as cookies may store user's personal details and return this information to the website) **[1 additional mark]**
- personal information may be sold or shared with third parties **[1 mark]**  
*description* (e.g. to other web sites without the user's knowledge and cause targeted online advertising) **[1 additional mark]**
- some advertisers use cookies which are visible on multiple sites **[1 mark]**  
*description* (e.g. allowing cross-site profiles) **[1 additional mark]**
- information associated with a user may be inaccurate **[1 mark]**  
*description* (e.g. when multiple users visit web sites from the same computer)  
**[1 additional mark]**
- some advantages of the cookies may be invalidated when the same user accesses the web site from multiple machines **[1 mark]**  
*description* (e.g. cookies on different machines will collect different information about the user and not provide complete results) **[1 additional mark]**
- not knowing what data is in the cookie **[1 mark]**  
*description* (e.g. may be sensitive) **[1 additional mark].**

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



4. (a) **Identify *two* features of any expert system.** **[2 marks]**

*Award [1 mark] for identifying a feature of an expert system up to a maximum of [2 marks].*

- knowledge base containing facts from a particular area of expertise
- rules used to link those facts (inference engine)
- human interface that enables the user to access the information in the knowledge base.

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

(b) **Describe *one* way a medical expert system could be used by doctors to diagnose the illnesses of patients.** **[2 marks]**

*Award [1 mark] for identifying a way a medical expert system can be used by doctors to diagnose the illnesses of patients.*

*Award [1 additional mark] for a description of how the medical expert system can be used.*

*Identification of the way [1 mark] and further description [1 additional mark].*

- a doctor suspects that a patient has a particular illness and uses the expert system to determine the symptoms of that illness **[1 mark]**  
*description* (e.g. the doctor suspects that a patient has measles or a similar illness and searches the expert system for the symptoms of that illness and compares with the symptoms of the patient) **[1 additional mark]**
- a doctor responds to questions regarding the symptoms of the patient and the medical expert system suggest possible illnesses and treatments  
*description* (e.g. the expert system can diagnose rare illnesses) **[1 additional mark].**

*Do not accept answers that refer to tele-surgery or remote monitoring.*

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

(c) **Explain *one* reason why the diagnostic medical database in part (b) should only be accessed by medical professionals and not be available to the public.** **[2 marks]**

*Award [1 mark] for identifying one reason why the diagnostic medical database should only be accessed by medical professionals.*

*Award [1 additional mark] for an explanation.*

*Identification of the reason [1 mark] and further explanation [1 additional mark]*

- reason: a doctor will have received training on how to use / interpret the diagnostic medical database **[1 mark]**  
*explanation* (e.g. a non-medical person may not be able to correctly interpret the information) **[1 additional mark]**
- reason: a doctor can know the seriousness of the illness and communicate the relevant information to the patient **[1 mark]**  
*explanation* (e.g. a non-medical person may become unnecessarily upset with the results presented by a diagnostic medical database) **[1 additional mark]**

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

- (d) Describe *two* reliability issues that must be considered when developing and maintaining a medical expert system. [4 marks]**

*Award [1 mark] for identifying a reliability issue up to a maximum of [2 marks].*

*Award [1 additional mark] for a description of the reliability issue up to a maximum of [2 additional marks].*

*Identification of the reliability issue [1 mark] and further description [1 additional mark]*

- reliability of the information contained in the knowledge base **[1 mark]**  
*description* (e.g. an expert system is only as good as the information contained in the knowledge base, a human doctor can recognise symptoms that may not be included in the medical diagnostic system) **[1 additional mark]**
- reliability of software program used by the expert system **[1 mark]**  
*description* (e.g. human vs programming errors) **[1 additional mark]**
- responsibility for updating the knowledge base **[1 mark]**  
*description* (e.g. medical updates and updating rules need to be performed by experts) **[1 additional mark]**
- unauthorized access and the corruption of the information in the expert system **[1 mark]**  
*description* (e.g. could cause an error in the diagnosis, password access to the various levels of the expert system helps ensure reliability) **[1 additional mark]**
- over-riding the expert system **[1 mark]**  
*description* (e.g. handing decision-making tasks to a computer/does doctor have authority to over-ride an outcome of the expert system?) **[1 additional mark]**
- liability when a mistake occurs **[1 mark]**  
*description* (e.g. insurance and legal issues) **[1 additional mark]**

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

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