



Information Technology: IT Applications 2007–2010

Written examination – November

Introduction

Units 3 and 4: IT applications replace Units 3 and 4: Information Processing and Management in 2007.

Examination specifications

The examination will be sat at a time and date to be set annually by the Victorian Curriculum and Assessment Authority.

There will be 15 minutes reading time and 2 hours writing time.

VCAA examination rules will apply. Details of these rules are published annually in the *VCE and VCAL Administrative Handbook*.

The examination will be marked by a panel appointed by the VCAA.

The examination will contribute 50 per cent to the Study Score.

Content

The examination paper will require students to respond to a series of items related to Outcomes 1 and 2 in both Units 3 and 4. The weightings given to each unit and each outcome will be approximately equal across the whole examination. Aspects of some outcomes that require the use of computers will not be examined, however underpinning key knowledge associated with these practical aspects is examinable.

Format

All questions on the examination are compulsory.

The examination will consist of **two** sections.

Section A 20 multiple-choice questions.

Section B short and extended response questions. These may include a variety of item types including short answer questions, short scenarios and questions with multiple parts. Students may also be required to respond in the form of diagrams, completion of flowcharts and tables. Students may be required to respond to stimulus material such as design briefs, case studies, newspaper articles or images.

This section will be worth 70 marks.

Examination questions will be presented in a question and answer book. Answers to Section A (multiple-choice) will be recorded on a multiple-choice answer sheet. Section B is to be answered in the spaces provided in the question and answer book.

Approved materials and equipment

Pens, pencils, highlighters, erasers, sharpeners and rulers.

Advice

During the 2007–2010 accreditation period for VCE Information Technology: IT applications, examinations will be prepared according to the Examination specifications above. Each examination will be an interpretation of these specifications and will test a representative sample of the key knowledge and skills.

Teachers should refer to the *VCE Information Technology Assessment Handbook 2007–2010*, p.33 for the examination criteria.

The following sample questions are intended to demonstrate how new aspects of Units 3 and 4 of the current study may be examined. They do not form the basis of a sample examination paper. Many items from previous VCE Information Processing and Management examinations remain relevant when preparing for the VCE IT applications examination, however teachers and students should be aware that the terminology used in the examination will be in accordance with the definitions provided in the IT Glossary in the current study design.

Sample questions

SECTION A

The following information is required for Questions 1 and 2.

Table 1

Book Id	Author Surname	Author First Name	Title	Publisher	Year
1	Cussler	Clive	Atlantis Found	Penguin	1999
2	Cussler	Clive	Valhalla Rising	Penguin	2001
3	Goddard	Robert	Sight Unseen	Corgi Books	2005
4	Francome	John	Rough Ride	Headline Books	1992
5	Cussler	Clive	Blue Gold	Pocket Books	2002
6	Cornwell	Patricia	The Last Precinct	Warner Books	2000
7	Cornwell	Patricia	Cause of Death	Warner Books	1996

Question 1

When the data in Table 1 is sorted in ascending order by **Author Surname**, **Author First Name** and then **Year**, the order of the records changes to

- A. 1, 2, 5, 6, 7, 4, 3
- B. 6, 7, 5, 2, 1, 3, 4
- C. 7, 6, 1, 2, 5, 4, 3
- D. 4, 7, 1, 6, 2, 5, 3

Question 2

The following query is applied to the data in Table 1.

Author Surname begins with 'C' and Year > 2000

This query will result in the following records being displayed.

- A. 1, 6, 7
- B. 1, 7
- C. 2, 5, 3
- D. 2, 5

Question 3

A flat file database contains

- A. 0 tables.
- B. 1 table.
- C. 2 tables.
- D. 3 tables.

Question 4

A relationship in a database file is

- A. a row in a table.
- B. a column in a table.
- C. a link between two files.
- D. a link between two tables.

Question 5

Jane wants to capture and import an image into each record of her database.

Which one of the following options would be best for this task?

	File name	Field name	Field type
A.	Image 1.txt	Photo	Text
B.	Record 1 image.bmp	Image	Memo
C.	Fish.jpg	Photo	Object
D.	House.doc	Image	Boolean

Question 6

The most recent version of a file can be identified by

- A. opening the email box and reading the date received column.
- B. opening the attachment and reading the date in the footer.
- C. dragging the mouse over the filename and reading the last modified date.
- D. right clicking the filename, selecting Properties and reading the date created.

Question 7

A virtual team has been formed to develop a new IT curriculum for Victorian schools. The five members are located in three different Australian states. The team leader communicates with the team using email.

The type of network used is

- A. a local area network.
- B. a peer to peer network.
- C. the Internet.
- D. an intranet.

Question 8

The human resources manager of a national organisation of 1500 employees wants to ensure all staff can check the pay rates for their job classifications at any time.

The **most** efficient method of achieving this would be to

- A. email all staff members each time pay rates change.
- B. upload new pay rates to the staff information page on the organisation intranet.
- C. personally hand a printed copy of the new pay rates to each employee.
- D. send new pay rates in a text message to each employee's mobile phone.

Question 9

Which statement provides the **best** description of the VLOOKUP function in a spreadsheet?

- A. It looks up all the numbers above the cell it is located in.
- B. It looks up the last time the file was modified.
- C. It returns the date to the formula in which it is located.
- D. It returns data from another part of the spreadsheet.

Question 10

When importing a table from a word processed document into a spreadsheet document the contents of the rows in the table become the

- A. number of rows of the spreadsheet.
- B. fields or columns of the spreadsheet.
- C. data type of the columns of the spreadsheet.
- D. contents of the cells in rows of the spreadsheet.

SECTION B

Question 1

James Herbert has a small business selling equipment for trout fishing which he started two years ago. James is an expert in trout fishing and this had been the main reason for the success of his business. James keeps a small range of products in the shop as samples, and he orders in what customers require.

Last year he had a work experience student who suggested that he create a database of all the products available for sale.

The student created a sample database with one table and the fields shown below.

Product code	Product name	Manufacturer	Item description	Supplier name	Contact person	Phone number	Cost
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- a. Discuss **two** electronic validation techniques that James could use in his database solution. Your answer should refer to the fields on which he would use them, and explain the types of errors which would be identified.

Validation type 1 _____

Validation type 2 _____

6 marks

James would also like to be able to query the database but is unsure how to do this.

- b. Explain what James needs to enter to answer each of the customer queries below.

- i. Do you sell items under \$50?

- ii. What length fishing rods do Truffy make?

1 + 2 = 3 marks

James has named these two queries Query 1 and Query 2.

c. Explain one weakness of using these names.

1 mark

Question 2

Explain two advantages of relational databases over flat file databases.

1. _____

2. _____

2 marks

Question 3

Select one function from each list shown below. Explain, using an **example**, how a database manipulates or handles the data when using the selected function.

- | | |
|---------------|---------------|
| List 1 | List 2 |
| search | count |
| sort | sum |
| query | max |
| | avg |

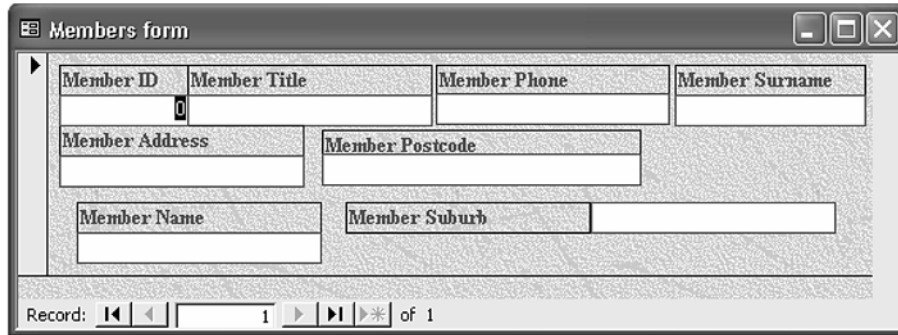
List 1 function: _____

List 2 function: _____

4 marks

Question 4

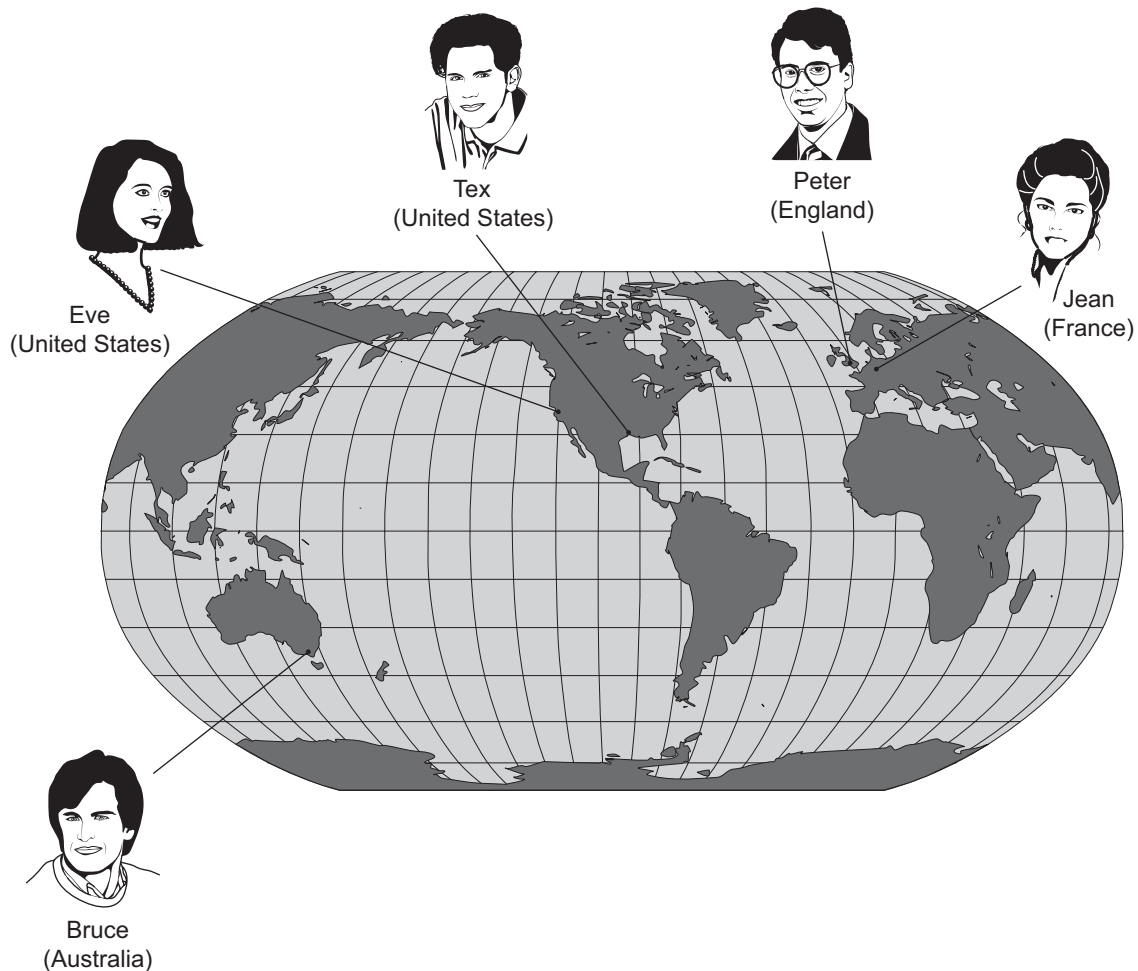
A user interface for entering new members into a database is shown below.



Describe **three** characteristics of effective user interfaces and discuss how they could be applied to improve this new members' form.

6 marks

Question 5



Enviroguard, a not-for-profit organisation based in Melbourne, Australia, employs a group of scientists who are collaborating on research into the problem of global warming. As the scientists are located in different countries, they are operating as a virtual team. Bruce has been elected as team leader. He must set up a website which meets the team's needs to

- i.** communicate information about global warming to the public around the world
- ii.** share the team's research reports with the rest of the scientific community
- iii.** enable only team members to access a virtual private network (VPN).

The website will provide public access to the information on global warming and the research reports. Enviroguard hopes this information will encourage people to provide financial support for their work. The VPN and email will enable the researchers to share their ideas, test results and conclusions. The information stored on the VPN is highly confidential and only the research team may have access to it.

The collaborators met at a recent science conference where they discussed their research and the website.

The team's communication procedures include encrypting and applying the team password to all email attachments that discuss test results. Despite having the correct technical set up, Jean is not following these procedures.

- a. Suggest a strategy which could be used to get Jean to follow procedures.

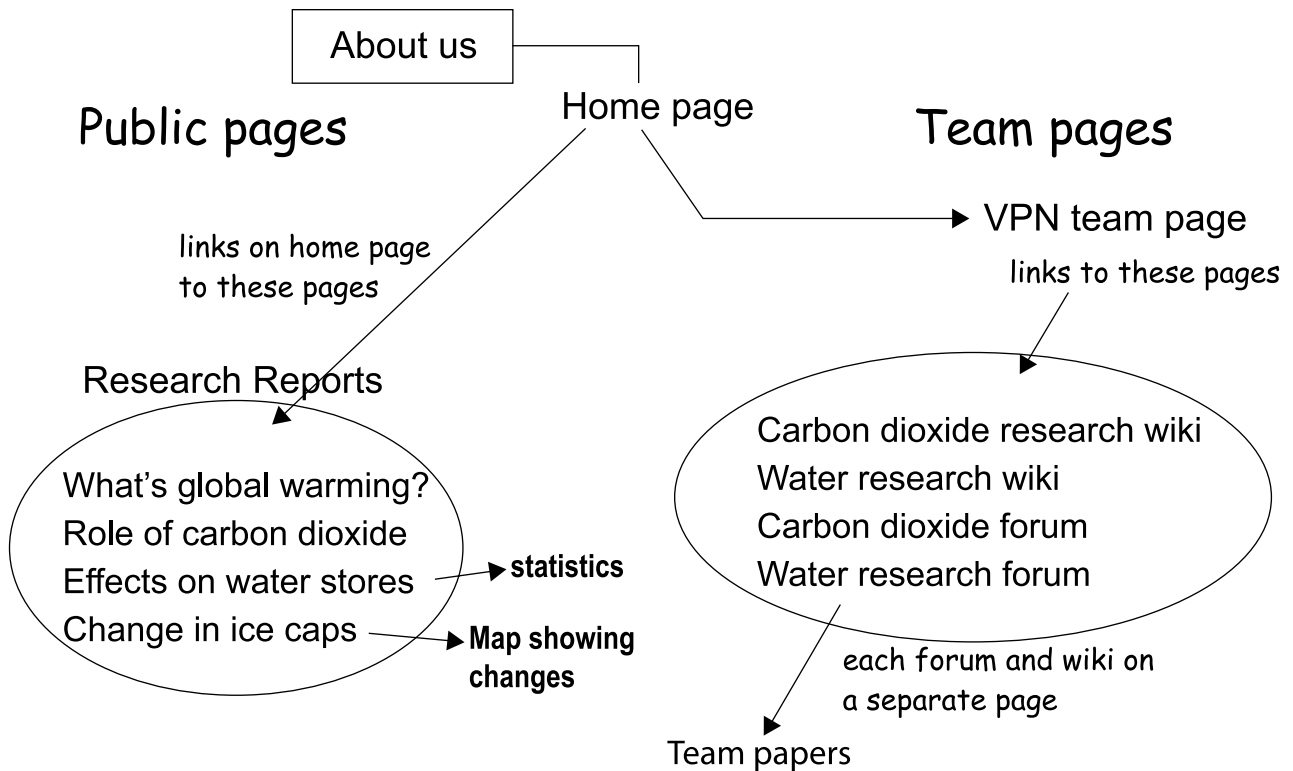
2 marks

- b. Explain how encryption protects the test results.

2 marks

During their meeting, Bruce drew a visual representation of the proposed website.

put all of this on home page



- c. Use an appropriate design tool to represent the **structure** of the team pages of the website. Include the home page in the structure.

4 marks

- d. Your design for the website has been accepted and a working prototype will be developed. Describe how the working prototype should be tested.

2 marks

The following options are available for the team of scientists to collaborate through the VPN.

- wiki
 - discussion forum
 - email
 - video conference
 - blog
 - web pages with links to document files
- e. Select one of these options and explain one advantage and one disadvantage of this option for sharing team opinions about new discoveries.

Option selected _____

Advantage _____

Disadvantage _____

2 marks

Li, a scientist working in Beijing, has been invited to join the research group. Li has a desktop computer with the following specifications.



product components	Intel Pentium 4 3.2 GHz 1 GB RAM 120 GB desktop computer
CPU	Intel Pentium 4 3.2 GHz processor
RAM	1 GB RAM
hard drive	120 GB 7200 RPM
drives	8 × DVD RW
VGA card	256 MB ATI 9600LE 8 × AGP with TV connection
monitor	17" LCD panel monitor
other	Swann DV home Pro (3pt 1394 Firewire card)
operating system	Windows XP (home edition)
installed applications	Office suite including statistical package

Bruce has advised Li he must get an Internet connection to participate in the research team. Li's employer has offered to purchase a 56 KB modem and pay for dial-up Internet access. The other team members have ADSL connections to the Internet.

- f. Will Li be disadvantaged by having only a 56 KB modem and dial-up access to the Internet?
Explain your response.

2 marks

Question 6

The screenshot shows the Department of Education website interface. At the top, there is a navigation bar with links for Home, About Department of Education, Ministers, and Contact us, along with a search bar labeled 'Search DoE'. Below this is a secondary navigation menu with categories: Students, Parents, Teachers & Trainers (highlighted), Leaders & Managers, Employers & Industry, and Browse all topics. The main content area is titled 'Teachers & Trainers' and includes a sub-header 'Find your way around the Teachers & Trainers section using the featured links below.' There are four featured link boxes: 'Teachers' (listing curriculum planning guidelines, EdNA Themes, Kahootz, etc.), 'Vocational Education & Training Teachers' (listing TAFE institutes and associations), 'University Educators' (listing universities and future directions), and 'Adult & Community Education Teachers' (listing ACFE and training frameworks). On the right side, there is a sidebar with sections: 'Find a...' (with links to School, TAFE, ACE, uni, etc.), 'Who can help?' (with links to Find a Contact, etc.), 'Key dates' (with links to Term dates, Awards & Events, etc.), and 'Popular links' (with links to TAFE Courses Directory, Edumail, etc.). At the bottom, there is contact information, website creation date (July 21, 2006), page update date (August 2, 2006), and footer links for State of Victoria, Disclaimer, Privacy, and Site Map.

Describe how **three** different design elements have been used on the interface shown above.

4 marks

Question 7

On opening the curriculum web page on a school website, a viewer sees the following navigation pathway at the top of the web page.

Home > About us > Curriculum

Explain the purpose of this navigation pathway and how this improves the usability of a website.

2 marks

Question 8

On-screen user documentation can be an integral part of a solution to an information problem.

a. Explain **two** factors you would need to consider when creating on-screen user documentation.

2 marks

b. Explain **two** ways on-screen user documentation differs from printed documentation.

2 marks

Question 9

Ajax Secondary College does a weekly backup of their students' work.

- i. Identify one accidental action, one deliberate action and one technical failure that the backup should protect against.
- ii. For each, describe one procedure that would ensure that the students' work is protected against this action/failure.

accidental action	
procedure	

deliberate action	
procedure	

technical failure	
procedure	

6 marks

Question 10

Gas bills have a number of different rates of charge within the one bill, as shown in Figure 1 below.

Service Address:

17 Oct 2006

Tariff Description	Meter Number	Bill Days	Current Reading	Previous Reading	Base Usage	Heating Value	Pressure Factor	Total Mj &/or Lt	Charge/Rate	\$
Life Energy Supply										
Gas Usage	6143Q5	58	003341	003096	000245 x	38.63 x	1.0109 =	9567.58 MJ		

Details

21/06/06 to 18/08/06 - 58 Days

* Winter Rate										
* Family Usage								3,900 Mj	\$0.010 per Mj	\$39.00
* Family Usage								4,100 Mj	\$0.008 per Mj	\$32.80
* Family Usage								1,567.58 Mj	\$0.009 per Mj	\$14.11
* Family Bi Monthly Flat Fee										\$22.66

Current Charges (excl. GST)

\$108.57

Gas usage

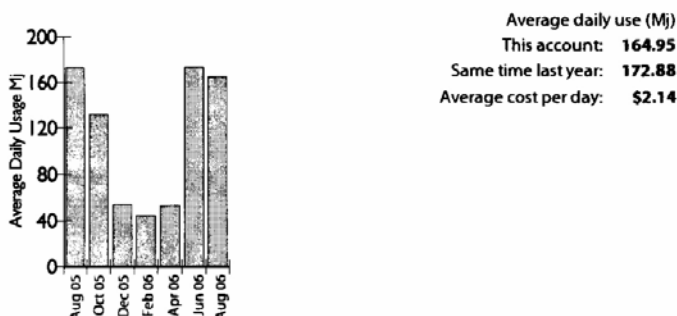


Figure 1

The spreadsheet shown in Figure 2 below was used to calculate the bill.

	A	B	C	D	E	F	G	H	I	J
1	Bill Days	Current Reading	Previous Reading	Base Usage	Heating Value	Pressure Factor	Total Mj			
2	58	3341	3096	245	38.63	1.0109	9567.51			
3										
4										
5									Mj Used	\$ per Mj
6									1	0.010
7				Charge Rate					3901	0.008
8	Winter Rate								8001	0.009
9	Charge for Mj rate 1			39.000						
10	Charge for Mj rate 2			32.800						
11	Charge for Mj rate 3			14.108						
12	Family Bi monthly Flat Fee			22.66						
13										
14	Current charges(excl GST)			108.568						
15										

Figure 2

The formula given below for cell **D9** was used in a spreadsheet to calculate part of the bill.

=IF(\$G\$2>3900,3900*VLOOKUP(3900,\$I\$6:\$J\$8,2),\$G\$2*VLOOKUP(\$G\$2,\$I\$6:\$J\$8,2,TRUE))

- a. Replace the cell references and functions in this formula with their values.

=IF(_____ >3900, 3900* _____, _____ * _____)

2 marks

- b. In the section of the spreadsheet shown in Figure 2, which cells should be electronically validated? Explain your choice.

3 marks

- c. Suggest an error message that would appear when someone accidentally enters the **meter reader's name** in cell B2.

1 mark

- d. In the spreadsheet shown in Figure 2, suggest two ways the appearance of the information presented on-screen could be improved.

2 marks