



GENERAL COMMENTS

Students responded confidently to this year's examination. They were prepared to reason out many of the questions and provide answers drawn from their own practical computing experiences. Teachers should be pleased that there were few incomplete papers.

Responses were strong in the area of information architecture, particularly the design of website home pages and the user interfaces of spreadsheet and database information products. Students also demonstrated a solid understanding of the legal responsibilities for the users and creators of information products. While many students were able to describe security procedures and equipment, they were not completely clear about the strengths and limitations of a particular piece of equipment within a security strategy.

Most students could select the appropriate formula for a spreadsheet function from a list of options but very few could create a VLOOKUP or IF formula for a given situation. Equally few students could clearly explain a one-to-many relationship in terms of the records, fields and tables of a given database. Teachers are reminded that the list of spreadsheet and database functions examinable is published in the *VCAA Bulletin*.

A large majority of students scored some marks for questions drawn from all areas of the *VCE Information Technology Study Design*, but only those students who could provide relevant examples to support descriptions or explanations in their responses were awarded full marks.

SPECIFIC INFORMATION

Section A – Multiple-choice questions

The table below indicates the percentage of students who chose each option. The correct answer is indicated by shading.

Question	% A	% B	% C	% D	Comments
1	11	75	4	10	This question assessed students' knowledge of the evaluation step of a problem solving methodology. It was pleasing to see a large majority of students recognised that the main reason for evaluating a website was to check that stated goals and objectives had been achieved.
2	92	3	5	0	Most students recognised the Australian <i>Copyright Act 1968</i> (option A) as the appropriate law covering the scenario described.
3	12	7	78	4	A large majority of students correctly recognised that an incremental backup, which only backs up changes made since the last full backup, saves time.
4	13	53	10	24	A small majority of students correctly identified 'goal at a strategic level of decision making' (option B) as the correct response. The decision is strategic, that is, it is made by senior management and involves forward planning over a three year period. It is a goal because it is long-term and it is general because it does not provide a target figure. A large minority of students selected option D. This is an objective because it is a small achievable task with a given target figure. It is a task undertaken to achieve the goal. In this case for example, an objective could be a 5 per cent reduction in customer complaints about mislabelled products.

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Question	% A	% B	% C	% D	Comments
5	7	1	5	88	It was very pleasing to see that most students recognised that the procedural failure was Joe removing the flash disk before the screen prompt indicated it was safe to do so (option D).
6	55	6	34	5	This question assessed students' understanding of validation and testing when preparing a design for an information product. A small majority of students correctly chose 'validate price and quantity and test total' (option A).
7	5	90	2	3	Most students were able to read the description of the patients form and identify option B as the best fit.
8	6	88	3	3	Most students chose the correct formula to calculate the total shown in the design for a spreadsheet. It was pleasing to see that most students understood the importance of avoiding circular references in spreadsheet formulas.
9	2	2	13	83	Again, it was pleasing to see that most students correctly chose the more complex formula to calculate the difference between cash sales on the worst and best days. Most students clearly understood that COUNT and AVERAGE were not appropriate functions.
10	13	1	15	71	The majority of students correctly identified the column chart as the most effective chart to represent changes in cash taken on four consecutive Fridays.
11	3	6	79	13	This question asked students to identify two necessary features of a primary key. It was pleasing to see that the majority of students correctly chose 'is a unique identifier and must have an entry' (option C).
12	1	85	2	12	It was pleasing to see that most students understood the concept of an efficient validation technique and could successfully apply it to the design of a database form. In choosing the title field, most students recognised that the combo box or drop list is best used in a field where there is a limited and known range of values from which users can select.
13	2	13	2	84	Most students correctly identified option D, the query which directly represented the conditions 'customers based in Adelaide and less than \$1000' as a better option than option C, which would include customers based in Adelaide but also those based in others cities such as Sydney, Brisbane or Perth.
14	3	56	33	8	This question asked students to select the best means of evaluating the efficiency of online help provided for users. Only option B, which suggested observing 'the time it takes to retrieve help', described a measure of efficiency. Efficiency is measured in terms of time, cost or effort. The other three options described measures of effectiveness. Effectiveness is measured in terms of completeness, attractiveness, accuracy, timeliness, accessibility, readability, clarity, relevance, communication of the message and usability.



Question	% A	% B	% C	% D	Comments
15	5	18	12	64	A macro executes a set of pre-arranged steps when an assigned key or button is pressed. The macro to centre and bold the five word company name in eight cells across the top row of a spreadsheet would need steps that include merging, centring and bolding. The majority of students selected option D as the correct option for this question. This macro would also need an absolute cell reference to position the company name correctly.
16	3	16	58	22	The majority of students selected wireless (option C) as the correct response. The chess players needed access from any location on the school's single campus. Wireless access points provide this and security is available with encryption. A large minority of students selected Cat5 – unshielded twisted pair (option D). This was not the best option as a cable transmission medium limits the locations from which players can access the network.
17	5	11	6	78	Most students correctly identified 'model of a solution that demonstrates functionality, interface and some links' (option D) as the best description of a prototype website.
18	6	1	91	3	It was very pleasing to see that most students understood the basic principles associated with the use of a virtual private network to solve a problem collaboratively.
19	63	11	18	8	This question assessed students' understanding of how the formulas created in a database query are tested. The majority of students selected option A, which recommended test data for the input fields 'First Number, Second Number'. The AutoNumber field generates its own number and the multiplication process will generate an output number for the answer field.
20	21	20	12	47	In this question students were asked to identify the critical path on a PERT chart. A delay in completing a task on the critical path will result in a delay to the whole project. The correct option (option D) was the longest path.

Section B – Short answer questions

Question 1a–b.

Marks	0	1	2	3	4	Average
%	30	17	15	19	18	1.8

Question 1a.

Students were asked to identify two characteristics of an audience for a chatroom home page. The question stated that the audience was made up of teenagers and that the chat site was about spy movies. It was pleasing to see that many students identified a range of characteristics which included age, gender, level of education and literacy or language and culture.

Question 1b.

Only a small number of students was able to explain how one of these characteristics should influence the content of the site's home page and achieve full marks. Many successful students explained that younger teenagers need lots of colour and simple language or images to keep them coming back to the site.

Question 2

Marks	0	1	2	3	4	Average
%	12	6	25	10	46	2.7

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The majority of students chose Subjects, Student Welfare, Parent Information and Visitor Information as the most appropriate headings for boxes W, X, Y and Z – the main categories of the links on a school website’s home page. It was pleasing to see that most students selected appropriate links to be placed under the headings chosen.

Question 3a.

Marks	0	1	2	Average
%	38	8	55	1.2

Students were asked to identify a formatting feature that added clarity to the information presented in a table. Successful responses included formatting features such as bold headings, centred headings and the shading of alternating rows. Most students explained that these formatting features added clarity because they allowed users to distinguish between the visual elements. For example, bolding makes ‘important text stand out’, shading rows ‘leads the eye’ to the correct information and left justify ‘stops confusion and crowding on the screen’ for the user.

Question 3b.

Marks	0	1	2	3	4	Average
%	59	5	21	2	12	1.1

In the second part of the question students were asked to identify two conventions and explain how each convention added to the usability of the information product. Many responses did not receive full marks for this part of the question because the conventions identified and the explanations given were not clear. Successful explanations typically conveyed the idea that the convention made the information more easily accessible to the users because it was a widely accepted and established way of presenting the particular type of information. Setting two decimal places for the money column and placing the unit kilograms or the dollar sign in the heading of a column were the most common examples of conventions.

A number of students identified the ‘check box’ or ‘star rating’ as a formatting feature or convention. These responses were successful where there was a clear explanation of how these features added to the clarity as a formatting feature or usability as a convention.

Question 4a.

Marks	0	1	Average
%	36	64	0.7

Most students correctly listed the *Health Records Act 2001* as the law covering Gina’s responsibilities for patient data.

Question 4b.

Marks	0	1	Average
%	47	53	0.6

Most students recommended that doctors should log off from the network when they left the terminal. Other answers were accepted provided the actions described indicated that access to the network was terminated.

Question 4c.

Marks	0	1	Average
%	40	60	0.6

The responses to this question included a range of the legal obligations found in Schedule 1 of the *Health Records Act 2001*. The most frequent legal obligation was ‘ask permission from the patient’.

Question 4d.

Marks	0	1	2	3	Average
%	71	23	5	1	0.4

When asked to compose questions that parents of a patient would ask the doctor, the patient and the Australian Health Commission, many students responded by providing a question that would help the patient’s parents understand a legal position rather than an ethical dilemma. A dilemma is a choice between two equally undesirable choices. In most instances the responses that received full marks made it clear that the parents were weighing up their child’s right to privacy against the benefits to society.

The following examples are from successful responses.

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Question 4di.

Parents to doctor.

Do you benefit from sending my child's medical records?

Question 4dii.

Parents to patient.

We want to make sure your rights are protected but are you comfortable for us to see your records?

Question 4diii.

Parents to the Australian Health Commission.

We want our child's privacy protected but will their medical records help research or save the lives of other people?

Question 4e.

Marks	0	1	2	Average
%	29	43	28	1

Most students recognised that a firewall prevents access to the network from users outside the network. Many students were able to obtain full marks by describing a situation where the hospital firewall checked the identity of users or the content of information trying to enter the hospital network.

Question 4f.

Marks	0	1	2	Average
%	38	30	33	1

Fewer students could identify the limitations of the firewall and describe situations where users inside the network gained illegal access to records. Many students successfully recommended that antivirus software and physical barriers should stand alongside firewalls as part of a security strategy.

Question 5

Marks	0	1	2	Average
%	29	30	41	1.1

Students were asked to comment on the notion that a given icon was intuitive, that is, resulting from direct knowledge or awareness without conscious attention or reasoning. Responses that conveyed a notion of an intuitive icon allowing users to confidently navigate the information product without needing words were successful. Typically these responses included the phrases 'yes, the colour red means stop or danger in nature and many situations in society' and 'the cross means stop or not' when used with 'other symbols'.

Question 6a.

Marks	0	1	2	Average
%	45	24	31	0.9

Most students could recommend a data type for the ProductID field but fewer could successfully justify their choice.

The following are examples of successful responses.

Autonumber because it provides a unique and sequential ID number automatically.

Text because it can be made unique and many companies like to include meaningful text in the ID.

Number because it can be easily made unique.

Question 6b.

Marks	0	1	Average
%	77	23	0.3

$\$10 \leq \text{'Unit Price'} \leq \25

or

$\geq \$10$ and $\leq \$25$

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Few students could write the rule for the message using the symbols.

Question 6c.

Marks	0	1	2	Average
%	25	44	32	1.1

Successful responses to this question identified the two components of an error message as 'telling users in plain language that they have made a mistake' and 'explaining how to fix it.' Most students could identify one of these components of the role an effective error message plays in an information system.

Question 6d.

Marks	0	1	2	Average
%	66	26	8	0.4

Few students could clearly state that in a one-to-many relationship, one record in the first table is related to many records in the second table or give an example such as 'one record in the Category table is related to many records in the Product table.'

Even fewer students could explain that the one-to-many relationship means there is no need to duplicate data entry in the second table or that it makes queries about products in a particular category easier because the tables are linked.

Some students confused the ideas associated with records, fields and tables. This is disappointing, as the concept of a one-to-many relationship is a fundamental underpinning of a reliable database management system.

Question 7a.

Marks	0	1	2	3	4	5	Average
%	38	7	15	14	10	17	2

Many students were able to shade in the tasks on the calendar correctly but most were unable to obtain full marks because they could not correctly place a Milestone symbol and the Predecessor arrows.

Question 7b.

Marks	0	1	Average
%	57	43	0.5

Only 43 per cent of students correctly defined the function of a milestone as, for example, 'the date when a group of tasks is completed' or 'the end of a significant point in the project'.

Question 8

Marks	0	1	2	3	Average
%	36	29	2	33	1.3

A majority of students placed the correct action in the sections of the flow chart that did not involve the decision box and yes and no branches. Many students did not recognise the statement 'Is this an existing customer?' as the reverse of the statement that Stefano wanted to 'introduce a 10% discount for new customers' and placed the yes and no actions on the wrong branches.

Question 9a.

Marks	0	1	2	Average
%	58	30	12	0.6

9ai.

Only a minority of students identified the network described as a WAN.

9aia.

Few students could explain that as the Internet-enabled mobile phones provided students with access to the prototype website, they would be able get their class notes while on geography excursions. Successful responses gave examples that included accessing online information about geography and maps.

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Question 9b.

Marks	0	1	Average
%	35	65	0.7

Most students identified a potential problem if teams sent data directly to the website. Examples included ‘inappropriate images or sent text directly to website which embarrass the school’, ‘outsiders intercepting data or sending data to embarrass the school’, ‘the school would need a teacher to check content or anti virus software or spyware’. Other successful responses focused on technical problems and these included ‘upload time, disk space, limited bandwidth and mobile drop out time’.

Question 9c.

Marks	0	1	2	Average
%	63	21	16	0.6

9ci.

This question asked students to provide one criterion to measure the effectiveness of the school website and most correct responses posed questions in terms of accessibility, usability, accuracy or timeliness. Typical examples included:

- will students have easier **access** to their class notes?
- will students be able to **use** the site to find the maps they want easily or quickly?
- will students be able to intuitively find **accurate** information when they need it on excursions?

Responses that only referred to time or effort without a reference to a measure of effectiveness did not score any marks.

9cii.

The successful explanations for choosing criteria typically stated ‘if the prototype website does not give easier access to class notes then it is not successful’.

Question 10a.

Marks	0	1	2	3	4	5	Average
%	3	1	9	11	23	52	4.1

It was very pleasing to see that the majority of students received full marks for their hand drawn and annotated design of a new website for ToysOnline.

Question 10b.

Marks	0	1	2	3	4	Average
%	9	7	20	21	43	2.8

Students who could explain how they had used two design elements with specific reference to their design and annotations received full marks for the second part of the question.

Many students correctly explained how two design elements are considered in a website in general terms but lost marks because they did not use their own design for the ToysOnline website or their own annotations to illustrate their explanation.

Question 11

It was clear that most students understood the concepts associated with the agreements and security issues associated with setting up and participating in a virtual private network (VPN). Successful responses included a variety of examples directly related to the activities of the sports coaches.

Question 11a.

Marks	0	1	2	Average
%	16	30	53	1.4

Students who described both a network feature and the type of collaboration it supported were awarded full marks for their response. Common examples were ‘coaches can use email to share files about game tactics’ and ‘coaches use electronic polling about decisions or new rules’.

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Question 11b.

Marks	0	1	2	Average
%	16	37	47	1.3

Students who described a security feature and provided an example relevant to the coaches were awarded full marks. Examples provided included 'secure login or encryption or headcount procedures for a network meeting, Wiki or MSN Messenger'.

Question 11c.

Marks	0	1	Average
%	32	68	0.7

Most students identified the problem of an old version of software not being compatible with a new version. This was typically described as 'not backward compatible' or 'they have different file extensions'.

Question 11d.

Marks	0	1	2	Average
%	16	51	33	1.2

Most students described and justified a strategy that included a procedure for agreement between coaches or a technical solution for the incompatible files. Strategies that justified the need for both were awarded full marks.

Question 12a.

Marks	0	1	Average
%	14	86	0.9

Most students correctly identified cell E14.

Question 12b.

Marks	0	1	Average
%	83	17	0.2

Few students could correctly write the formula for the IF statement =IF(C2>40, 'YES', ' ').

Question 12c.

Marks	0	1	Average
%	95	5	0.1

Very few students could correctly write the formula for the VLOOKUP statement
 =VLOOKUP(C2,\$G\$9:\$H\$11,2)*C2
 or
 =VLOOKUP(C2, G\$9:H\$11,2)*C2

A small number of students wrote formulas made up of nested loops. These responses were awarded marks where the formula worked correctly.

Question 12d.

Marks	0	1	Average
%	69	31	0.3

Successful responses to this question provided test data that would trigger a change to the existing maximum number in cell C6, which was 37.

The most frequent successful response was C3 = 38 and C15 = 38

Students who gave responses such as C > 38 and C3= C15 were also awarded marks.

Question 12e.

Marks	0	1	Average
%	62	38	0.4

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The successful responses to this question suggested ways to make the spreadsheet more user-friendly. Examples included 'add a label to the A15 cell', 'add a macro or coding or a program that highlights the name of the maximum sale – cappuccino' and 'insert a new column to highlight the name of the maximum sale – cappuccino'.

Question 12f.

Marks	0	1	2	Average
%	41	41	18	0.8

Most students understood, in general terms, the reason for choosing a macro to solve the manager's information problems.

12fi.

Successful explanations of why the Help Desk chose the macro included 'a macro is more user friendly for the managers because it correctly selects the range and sequence of steps' or 'the Help Desk gets less calls because managers make less mistakes'.

12fii.

Successful descriptions of how the macro saves the managers time included 'stops time being wasted on slips or preventable errors', 'managers can rely on the information to make important decisions because the macro is foolproof' and 'it saves the managers time because they can click one button and the whole chart process is done for them'.