

# 2016 VCE Computing: Informatics examination report

## General comments

The 2016 VCE Computing: Informatics examination was the first examination based on the *VCE Computing Study Design 2016–2019*. The 2016 exam contained three sections: Section A – Multiple-choice questions, Section B – Short-answer questions and Section C – Case study.

Overall, the multiple-choice section was answered very well. Questions that students did not perform well on were mainly related to components of the study design that were new in 2016, such as design principles, writing a hypothesis and project management.

For the first time in this study students were asked to read a case study insert and answer a number of questions. While in general this was handled well, it was clear that a number of students struggled with this, and there was evidence that they either had not read the case study or could not refer back to it when needed.

It was obvious that students understood both manual and electronic validation, as students provided well-thought-out answers to questions related to this. Responses were also strong in the area of disaster recovery plans, including backups, and students demonstrated a sound understanding of the reasons correct procedures are needed when dealing with a disaster recovery plan and the consequences if these procedures are not followed. The project management and databases questions were also completed very well.

Students demonstrated some understanding of techniques used to generate alternative design ideas, linking techniques such as brainstorming and comparing current websites within the same field to their own designs, and looking at how they are designed; however, other students seemed to misunderstand the question, resulting in a large number of students not obtaining any marks.

It was apparent from many responses that referencing (Section B, Question 4) is something that students need further practice with, as is interpreting a user flow diagram (Section C, Question 8). In both of these questions students either did not answer or struggled to comprehend what was being asked of them.

## Specific information

This report provides sample answers or an indication of what answers may have included. Unless otherwise stated, these are not intended to be exemplary or complete responses.

The statistics in this report may be subject to rounding resulting in a total more or less than 100 per cent.

## 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	% No Answer	Comments
1	17	59	10	14	0	
2	19	5	17	58	1	
3	30	4	56	10	0	
4	67	4	20	8	0	
5	86	9	4	2	0	
6	6	31	47	16	0	A hypothesis must have a prediction.
7	1	72	20	7	0	
8	4	19	3	73	0	
9	83	3	8	5	0	
10	5	0	1	94	0	
11	29	6	39	26	0	As Task E is not dependent on Task D and there is slack time of two days for Task D, there is no effect on Task E.
12	7	74	9	9	0	
13	70	5	6	19	0	
14	35	53	3	8	0	In the key knowledge of Outcome 1, an approach to problem-solving is, 'characteristics of information for educating worldwide audiences, including gender and culture inclusiveness, commonality of language, age appropriateness'. Option A was the only option that fit this statement.
15	2	3	89	5	0	
16	9	11	11	68	0	
17	2	7	52	38	0	Option D has a clear folder structure that allows for the originals from each photographer to be easily accessed, as well as all the final photographs.
18	31	2	52	15	0	
19	3	4	11	82	0	
20	12	29	46	13	0	Option 1 allows for complete disposal of all the old drives before moving to a cloud solution. Option 4 ensures that the cloud company disposes of the data that is not required in the cloud anymore.

## Section B – Short-answer questions

### Question 1a.

Marks	0	1	2	Average
%	53	36	11	0.6

The most common accepted responses were: can save storage space, changes to information only need to be made in one place, less chance of losing data as only entered once, removes repetition and data redundancy.

### Question 1b.

Marks	0	1	2	Average
%	39	32	29	0.9

A number of students were able to identify the cardinality of the relationship but struggled to show an understanding of what the relationship was. The most common accepted response for the cardinality was Customer (1) to Shoe (M); other responses that were accepted were  $\infty$ , N and crow's foot. The most common accepted response for showing the relationship was 'buys'.

### Question 2a.

Marks	0	1	Average
%	38	62	0.6

This question was well answered. Most students could demonstrate knowledge of what a manual technique is. The most common accepted response was proofreading.

### Question 2b.

Marks	0	1	2	Average
%	40	18	42	1

Students were asked to describe an electronic validation check. While most students could identify a number of electronic validation checks that could be used to identify possible errors in data, many could not successfully describe the check. The most common accepted response was existence check. Other acceptable answers were range check, input mask and data type check.

### Question 3a.

Marks	0	1	2	Average
%	71	17	12	0.4

The majority of students misunderstood what was being asked of them in this question. A large number of student responses were related to different types of design tools or the number of design ideas they completed.

Students who obtained marks for this question wrote about how they could brainstorm ideas or compare current websites within the same field and look at how they are designed.

**Question 3b.**

Marks	0	1	2	3	Average
%	53	25	15	7	0.8

Results indicated that many students do not understand what a criterion is and how to write one and/or do not know how to evaluate. Students who gained marks for this question could identify a question relating to ease of navigation, attractiveness and usability; only a few could justify why it was a criterion.

**Question 4**

Marks	0	1	2	Average
%	34	47	19	0.9

Students received one mark for naming one of the four referencing methods: Harvard, APA, Chicago or IEEE. The other mark was awarded for having the information in the correct order, for example, author, date, title, date viewed or retrieved, and URL.

It was clear that most students had an understanding of one of the four referencing methods; however, fewer students could actually reference the information provided correctly.

**Question 5a.**

Marks	0	1	2	3	Average
%	24	19	41	15	1.5

Students were asked to identify three features that did not follow appropriate conventions in a design. Most students were able to identify one or more, and the most common accepted responses were: logo in incorrect place, navigation bar should be at top or to the left, and underlining in the body text will be mistaken for links.

**Question 5b.**

Marks	0	1	2	3	4	Average
%	5	12	30	37	16	2.5

High-scoring designs included a logo in the top-left corner, navigation bar at the top, contact button at either the top or bottom, and the main body of text not underlined.

Many students did not gain full marks as they did not indicate that there should be no underlining in the main body of the text.

**Question 6a.**

Marks	0	1	2	Average
%	19	41	40	1.2

Accepted responses included:

- in the event of a disaster that destroyed the server and the backup tape, there would be no data to recover
- the tape could easily go missing or get stolen, and this could result in a breach of privacy, and a loss of trust, reputation or goodwill
- if the tape went missing there would be no backup if something happened to the data on the servers.

Most students were able to outline one or two possible consequences for the firm if the head of the organisation did not take any action. Student responses that did not obtain full marks did not relate the consequence to the actual backup tape; many referred to the data on the server being destroyed.

**Question 6b.**

Marks	0	1	Average
%	23	77	<b>0.8</b>

Students were asked to recommend an action that the head of the organisation should take to remedy the situation. Accepted responses stated that the backup tape should be taken off site or locked in the safe, or the head of the organisation should appoint someone as the keeper of the tape and make sure they take it every night after work.

**Question 6c.**

Marks	0	1	2	Average
%	20	46	34	<b>1.2</b>

Responses to this question indicated that most students understood the value of a disaster recovery plan and why one is needed. Not all students could explain why the head of the organisation should be concerned.

Appropriate student responses could have included:

- if a disaster were to occur there would be no way to recover client data, which would lead to loss of business and income
- if someone steals or tampers with the data, or if the data is lost, the business has no way of getting the data back.

**Question 7**

Marks	0	1	2	3	4	Average
%	15	18	33	25	9	<b>2</b>

Students were awarded two marks for a discussion of a key legal requirement, one mark for what it applies to and one mark for what it does not apply to. The majority of students could identify one of the key legal requirements and state what it applied to, but many students could not identify what it does not apply to.

An example of a response that would obtain full marks is: *Copyright Act* – it is a legal requirement to gain permission to use someone else’s property (video) on your website. The *Copyright Act* applies to copyrighted information such as a video on YouTube where viewings are allowed but the work cannot be downloaded. The *Copyright Act* does not apply in this situation if the video is yours and only you have rights to it. If someone else is in the video, you need their permission to use the video on your website.

## Section C – Case study

### Question 1

Marks	0	1	2	3	4	5	6	Average
%	7	15	23	18	16	13	9	3

The most common accepted answer was the following.

Task	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
A																					
B																					
C																					
D																					
E																					
F																					

Task D could have started anytime up to S 11.

To score full marks, students needed to indicate all tasks, their duration and predecessors.

Students who did not gain full marks usually extended Task B over the weekend, thinking that Task B could not be completed on weekends.

### Question 2

Marks	0	1	2	Average
%	8	13	79	1.7

This question was well answered. Most students could identify and explain that the task that contains data was from a primary source was Task B because Bill had collected this data himself.

### Question 3a.

Marks	0	1	2	3	Average
%	24	12	26	37	1.8

The majority of students could suggest an appropriate date for Bill to conduct his face-to-face interview in relation to the other tasks, but not as many students were able to explain the reason for the suggested time.

Acceptable dates to conduct the face-to-face interviews were 6, 7, 8, 9 or 12, as long as they avoid Task D. This is because Bill is not conducting any other activities at these times.

**Question 3b.**

Marks	0	1	Average
%	66	34	0.4

Student responses received a mark if they clearly indicated that the overall impact on the project timeline would be extended by one day.

It was clear from student responses that many students misinterpreted the question; a number of students indicated that there was no change to the timeline as Task B can be completed any time between 6 and 12.

**Question 4a.**

Marks	0	1	2	Average
%	38	28	34	1

Most students had an understanding of the ways in which Bill could arrange for the responses to the questions to be coded to support manipulation once the survey is closed. Accepted responses stated the use of a Likert scale (scaled response) with a range of 1 to 5 or the use of radio buttons allowing only one option.

**Question 4bi.**

Marks	0	1	2	Average
%	56	38	7	0.5

Responses included:

- Bill can graph the scaled responses with one graph for each question and then see why people want to work from home.
- Bill could use a counting function to count how many of each kind of answer for each question, then graph the counts.

**Question 4bii.**

Marks	0	1	Average
%	67	33	0.4

The most frequently accepted responses to this question were:

- positive trend as it would identify the things that are most important to the telemarketers
- Bill would likely find a positive response to why the telemarketers want to work from home.

**Question 5a.**

Marks	0	1	2	Average
%	23	25	52	1.3

Any two of:

- place of work
- satisfaction level of employees
- number of employees leaving the company
- number of sick days.

**Question 5b.**

Marks	0	1	2	3	4	Average
%	13	13	37	18	19	<b>2.2</b>

Students were asked to identify one item from each data set that supports Bill's hypothesis and explain how it does this.

Data set 1:

Student responses that identified better retention of experienced staff, higher productivity or improved employee morale obtained a mark; if they linked the item to Bill's hypothesis they obtained full marks.

Data set 2:

Student responses that identified increased job satisfaction (or decreased sick days), improved productivity or increased morale obtained a mark; if they linked the item to Bills hypothesis they obtained full marks.

**Question 6**

Marks	0	1	2	3	Average
%	24	33	32	10	<b>1.3</b>

The majority of student responses that gained marks for this question linked how both digital recordings and online presentations could highlight an item relating to Bill's hypothesis in his multimodal online report.

High-scoring answers suggested that Bill could use a graph to display a visual representation of the data that has been collected and an uploaded interview, either audio or video; they also indicated an advantage of the online aspect of the multimodal solution.

**Question 7**

Marks	0	1	2	Average
%	43	26	32	<b>0.9</b>

This question required students to explain one benefit of minimising risk if Mary were to save the online survey to the cloud. Many students read this as asking what are the advantages of a cloud solution and proceeded to describe the advantages of cloud computing for Mary. These students did not gain any marks.

Students who gained marks explained that the benefits included if something were to go wrong with InformUS's server the survey data would still be safe, or external sources would not have access to InformUS's server via the survey thus reducing the risk of InformUS being hacked.

**Question 8**

Marks	0	1	2	3	4	5	6	Average
%	18	9	17	23	13	11	9	<b>2.8</b>

Students were asked to describe where the security control should be placed and draw a line to it, state the type of control required and briefly explain why it is needed.

Security controls that were accepted included:

- at log-in page – username and password, three password tries and then locked out, use of CAPTCHA



- telemarketers' phone list – encryption
- survey questions – encryption
- participants' details – encryption, SSL.

Each response required an explanation to as to why the security control was needed.

Students who left the 'where' section blank and drew an arrow to where the security control was needed, or who did not draw an arrow, could not obtain full marks.

#### Question 9a.

Marks	0	1	2	3	Average
%	11	7	31	51	2.2

The majority of students were able to correctly identify the correct data entry method as being a drop-down menu or radio buttons. Students then justified their choice. To obtain full marks students could either describe a positive of the chosen option and compare a negative of another of the options, or give two positives of the chosen option. For example, a response might say that radio buttons should be used, because the options can be clearly seen on the screen the whole time and there is only one chosen option. A text box would take more time, as the user has to input their answer, while the drop-down menu shows one option at a time and it takes time to choose the box and read the options.

#### Question 9b.

Marks	0	1	Average
%	25	75	0.8

Students needed to identify a navigational, log-out, finish, end or complete button.

#### Question 10

Marks	0	1	2	Average
%	27	28	45	1.2

Most students were able to identify a validation technique, but not all of them were able to describe why they needed to use it.

Responses that gained marks were:

- range check to ensure the number is in range
- data type check to make sure the postcode is a number
- input mask to only allow certain characters
- an existence check to make sure data is entered.

Many students misread the question and thought that the '3000' referred to Victoria only. In this instance, the student needed to use a range check to gain marks.

#### Question 11

Marks	0	1	2	Average
%	14	25	61	1.5

- Telemarketer ID: string or text
- Participated? Boolean (Yes/No, T/F) or integer

**Question 12**

Marks	0	1	2	Average
%	56	21	23	0.7

Students were asked to explain why the data was not in first normal form. Many students were able to identify that there was relating data in the question field, but not as many students were able to explain that the field cannot contain separate data.

**Question 13a.**

Marks	0	1	2	Average
%	33	37	29	1

Students were asked to explain an ethical reason why Shane should not use the InformUs list of telephone numbers. Student responses that gained marks mentioned that Shane was using the data for not what it was intended for, such as 'As this is not the intended purpose of the telephone numbers collated by InformUs and as such taking them and using them for something else even if it is a good cause, can prove an ethical dilemma'.

Students who mentioned that it was breaking privacy laws or was illegal did not obtain any marks.

**Question 13b.**

Marks	0	1	2	3	4	Average
%	21	12	33	12	21	2

Student responses that gained marks included:

- develop a privacy policy and educate staff about it
- implement a code of conduct
- restrict access to the phone list to only those who require it
- tell participants how their data will be used
- seek permission from participants to use their data.

To gain full marks, the advice given needed to include an action that InformUs should take.