



## **2004 Information Processing and Management GA 3: Written examination**

### **GENERAL COMMENTS**

Overall, the student responses to the format of the examination were very pleasing. Most students attempted all of the multiple-choice questions, and the range of scenarios in Section B allowed students to demonstrate their breadth of understanding of the key knowledge contained in the Information Processing and Management Victorian Certificate of Education Study Design. A small proportion of students rewrote the question before commencing their response, which was not necessary.

The questions covered a wide range of the key knowledge from the Study Design, and it was evident in the student responses that teachers had covered the course content. However, many students did not pay careful attention to the stem of the question and responded in a generic manner. This clearly distinguished the top answers from the less successful answers. This was particularly evident in Questions 11d, 12b and 13c where students were asked to explain, discuss or provide an example related to a particular scenario. In Question 12b, students were asked to 'explain their recommended strategy' covering the points identified. Students tended to list rather than explain. For example, 'Training should be on-site' rather than 'I would recommend that the training occur at the library so staff are in a familiar environment', which explains why the training should be on-site. Students should be familiar with terms such as list, outline, explain, discuss and justify. A useful strategy is to highlight key words. Students who did this generally scored well and responded in the expected manner.

Marked differences in student performances were noted in questions that required multiple responses, for example Questions 1b, 2b, 7, 10c and 13e. Some students only answered one requirement; others answered both requirements by just repeating the same response using slightly different wording. For example, for Question 13e, a common student response was 'Difficulty one is that staff cannot easily find a client's quote' and 'Difficulty two is that when a client rings up with a query it is hard to find their quote'.

It is important that students indicate their understanding of key study terms when using them in responses. For example, many students used the words 'efficiency' and 'effectiveness' in their answers, but did not demonstrate their understanding of those words. This was particularly illustrated in Question 1b where students gave their reasons for using a drop down box as 'it is more efficient' and 'it is more effective'. This type of response does not earn marks for the student.

### **Section A – Multiple-choice questions**

Students generally handled this section successfully. A significant number of students gave an incorrect answer for Question 5 (and Question 13 in Section B), which focused on the stages of the system development life cycle. It was also evident from Questions 4 and 7 that some students found it difficult to identify characteristics of terms defined in the Study Design and the distracters provided were effective.



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

Question	A	B	C	D
	%	%	%	%
1	84	3	9	4
2	6	3	78	13
3	95	0	2	3
4	4	17	24	55
5	63	21	11	4
6	5	6	71	18
7	15	63	16	6
8	13	3	26	58
9	2	10	4	84
10	37	17	40	6
11	8	8	83	1
12	19	9	0	71
13	58	15	20	7
14	76	13	5	6
15	20	61	14	5
16	4	71	14	11
17	4	86	7	2
18	4	4	37	55
19	5	77	11	8
20	11	9	38	41

## Section B – Short answer questions

### Question 1a

Marks	0	1	Average
%	60	40	0.4

Many students incorrectly identified validation as the information-processing step. The correct response was input.

### Question 1b

Marks	0	1	2	Average
%	24	44	32	1.1

Students generally handled this question appropriately, with the most common responses being:

- reduces errors
- restricts users' responses
- keeps input data in the same format.

### Question 2a

Marks	0	1	Average
%	45	55	0.6

The role of a floppy disk drive is to read and write data onto a disk.

It was disappointing to see that many students could not identify the role of a floppy disk drive. Students commonly referred to the drive as a storage medium or as a way of transporting files.

### Question 2b

Marks	0	1	2	Average
%	4	30	67	1.7



Most students could generally identify reasons why floppy disk drives are no longer used. The most common responses were:

- there is insufficient capacity to store files of the size that are created today
- they are too slow at saving and transferring large files that fit on the disk
- there are smaller, more portable storage options available (for example, memory sticks).

**Question 3**

Marks	0	1	2	Average
%	57	16	27	0.7

Students found this question challenging. Many students missed the point of the question about ‘navigation of this page’ and suggested that each item have its own page. The following are examples of typical answers.

Technique	Justification
bookmark/anchor	A bookmark takes the user to the exact location on the page that is of interest to them without the need to scroll past the irrelevant information/products.
internal hyperlink	Allows the user to click on the item of interest and move immediately to that part of the page.
thumbnail	The user does not have to wait for numerous large images to download but can select the item of interest and only download the necessary image.

**Question 4**

Marks	0	1	2	3	Average
%	13	32	42	13	1.6

Convention	Example
Mandatory	A, C, F
Preferred	D
Optional	B, E

In general this question was answered quite well, although some students confused a preferred and an optional convention.

**Question 5**

Marks	0	1	2	3	4	Average
%	10	7	28	10	46	2.8

Common responses included the following:

Capability	Explanation
Ability to print in colour	Very few images are designed for black and white. The more realistic the colours, the more truly Brittany’s images will appear. If the colour produced by the printer is poor then the quality of the final print will be poor.
Resolution (dpi)	Because Brittany wishes to print images, the dots per inch will be important since the higher the resolution the better the image quality of her final prints.
Speed (ppm)	If Brittany wants to print several images, the time taken to print a single image may cause this to be a lengthy process and a faster, more expensive printer may be needed.

While some students had difficulty in identifying the capabilities of a printer, most students could explain why each capability was needed for printing digital pictures.

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## Question 6

<b>Marks</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>Average</b>
%	32	7	16	45	<b>1.8</b>

Task No	Task Description	No of Days	M	T	W	T	F	M	T	W	T	F	M	T	W	T	F
1	Create system specification	3															
2	Trial software	2															
3	Customise and test software	4															
4	Purchase and test hardware	3															
5	Install software	2															
6	Train staff	1															

Some students simply coloured in the last six boxes.

## Question 7

<b>Marks</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>Average</b>
%	6	5	18	33	38	<b>2.9</b>

Students found this question challenging and some students repeated the same responses for both the customer and the company. No marks were awarded for repetition. Some sample responses are included below.

### On-line support

	<b>Company</b>	<b>Customer</b>
<b>Advantage</b>	<ul style="list-style-type: none"> <li>staff do not have to deal with irate customers</li> <li>can set up a Frequently Asked Question (FAQ) section to speed up the process</li> <li>regular problems can be already documented in a file ready to send.</li> </ul>	<ul style="list-style-type: none"> <li>can download patches/fixes if needed</li> <li>queries can be sent any time of the day.</li> </ul>
<b>Disadvantage</b>	<ul style="list-style-type: none"> <li>the problem may not be clear to staff trying to respond</li> <li>bandwidth might be used by customer requests so cannot complete other work.</li> </ul>	<ul style="list-style-type: none"> <li>cannot be used if the problem is with the Internet connection</li> <li>written response in email may not be clear to the customer (too technical).</li> </ul>



**Queued telephone support**

	<b>Company</b>	<b>Customer</b>
<b>Advantage</b>	<ul style="list-style-type: none"> <li>personal communication is clearer and the problem can be solved on the spot</li> <li>customers are dealt with in order of ringing.</li> </ul>	<ul style="list-style-type: none"> <li>immediate response if the computer does not perform/operate as expected</li> <li>can seek clarification immediately (while still on line) if anything is unclear.</li> </ul>
<b>Disadvantage</b>	<ul style="list-style-type: none"> <li>very time consuming, as staff take each client through the process step by step</li> <li>more staff would be required on the help desk.</li> </ul>	<ul style="list-style-type: none"> <li>queues can be long and lead to frustration</li> <li>call could be very expensive if it is a timed call or needs to be made from a mobile phone.</li> </ul>

**Question 8**

Marks	0	1	2	3	4	Average
%	14	26	30	16	13	1.9

Item	Role
fibre optic cable	The role of fibre optic cable is to carry the data signal over a physical medium using light rays.
microwave transmitter	The role of a microwave transmitter is to receive and transmit data over long distances through the air.
router	The role of the router is to control the flow of data in a Wide Area Network. It allows or disallows packets in and out of the network and forwards acceptable packets.

This question had two components – selecting those items that would be used in a WAN and then describing their role. Students frequently selected the correct items but could not explain their role. Rather, they tended to write about functionality or characteristics.

**Question 9**

Marks	0	1	2	3	4	5	6	Average
%	9	8	12	20	24	19	8	3.3

The most common responses were:

Type of Computer	Physical security	Electronic security
Counter	<ul style="list-style-type: none"> <li>surveillance camera</li> <li>locked keyboard</li> </ul>	<ul style="list-style-type: none"> <li>limited menu</li> <li>restricted rights</li> </ul>
Office	<ul style="list-style-type: none"> <li>security cable</li> <li>swipe card room entry</li> </ul>	<ul style="list-style-type: none"> <li>login and password entry</li> </ul>
File server	<ul style="list-style-type: none"> <li>locked room/door</li> <li>alarm system</li> </ul>	<ul style="list-style-type: none"> <li>biometric identification</li> <li>firewall</li> </ul>

Many students repeated their answers for the different types of computers, even though the question clearly stated that all measures needed to be different. Many students, for example, put login and password for all three electronic security methods, or a lock for all three physical methods. Poorer responses failed to differentiate between physical and electronic security measures.

**Question 10a**

Marks	0	1	Average
%	40	60	0.6

The backup or recovery plan must be tested to ensure the backup can be restored

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or

A backup or recovery plan is there to enable the data and information to be restored in case of a disaster, so it must be tested to ensure it works or the plan is of no use.

## Question 10b

Marks	0	1	2	Average
%	20	50	30	1.1

Some typical responses were:

- a hot site is in an anonymous building so it cannot be easily identified by people who want to attack an organisation, such as thieves or disgruntled employees
- a hot site is away from the city centre to ensure the data is still available in the case of a disaster (for example, a fire, flood, power failure or a terrorist attack).

While some students were unable to link their answers to the circumstances described in the newspaper excerpt, they wrote about the need to protect data from terrorists or individuals who wanted to harm the organisation. A common misconception was that data stored in an anonymous building would stop hackers: hackers do not need to know a physical location. Students who were unsure of the reasons for using hot sites tended to copy phrases from the excerpt, for which they were awarded no marks.

## Question 10c

Marks	0	1	2	Average
%	18	27	55	1.4

Tapes are a recommended backup medium because:

- they are an inexpensive way of storing large quantities of data
- they are a reliable storage medium
- they are small and easy to transport to an off site location.

Apart from a few students who interpreted tape as a music tape, this question was well handled. A small number of students had difficulty outlining a second reason that was different from the first.

## Question 10d

Marks	0	1	2	3	Average
%	35	11	25	28	1.5

No this is not a strict backup regime.

- **location** – the tape is kept on site and if a disaster strikes both the system and the backup could be destroyed. The article indicated it should be off site to be a strict backup regime
- **timing** – incremental backups are not done often enough. Even though they are done regularly, a large company working twelve hour days for six days a week should do incremental backups at least every night. Too much data could be lost.

Students found this question difficult because it asked them to justify their response. For a large firm, this was not a strict backup regime although some students thought that it was simply because a full and an incremental backup was mentioned. A small number of students did not answer the first part of the question as to whether this was a strict backup regime. It is important that students read questions carefully and respond to all sections of the question. A number of students stated it was a strict regime, then proceeded to explain why it wasn't. Students who did this were not awarded full marks.

## Question 11a

Marks	0	1	Average
%	52	48	0.5

Technological



Students either knew the terminology used for describing an impetus for change or they did not.

**Question 11b**

Marks	0	1	Average
%	46	54	<b>0.6</b>

LAN or Wireless LAN

This was generally handled well; however, some students confused 'type' with 'topology'.

**Question 11c**

Marks	0	1	2	Average
%	13	33	54	<b>1.4</b>

- **printed output** – client's bill, client's receipt
- **electronic output** – meal orders for kitchen, drink orders for bar.

It was pleasing to see that the majority of students were able to identify the outputs of a system which they had not encountered before. Students who did not gain full marks generally found the electronic output harder to identify.

**Question 11d**

Marks	0	1	2	3	Average
%	13	26	35	26	<b>1.8</b>

Some typical responses were:

- the waiter/waitress will be able to place orders faster, as meals and drinks can be taken by the same person and sent simultaneously, rather than the waiter having to visit both the kitchen and the bar or needing to have two waiters
- the system is more efficient as it will automatically calculate the bill without the waiter or another staff member having to enter the items purchased into a cash register or add them up manually
- stock reordering can be done instantly based on the food and drink ordered and consumed by the client. The need to constantly check stock is reduced and fewer stock checks will be needed in order to maintain adequate stock levels.

This question clearly differentiated students' performances. The high scoring responses were able to identify how improvements in time and effort could be made. The lower scoring responses frequently confused efficiency and effectiveness and wrote about improved quality of service, fewer errors or lost orders. The stem of this question was 'discuss', and students who scored poorly tended to list in two or three words what the improvement was rather than discuss how the efficiency was achieved.

**Question 11e**

Marks	0	1	2	Average
%	59	26	15	<b>0.6</b>

The most common responses were:

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Concern	Explanation
promotions/performance pay could be based on this data	The manager may set unrealistic targets which are measured electronically to award performance pay. Data collected from this system may not be the best method of assessing the targets set, and should be used in conjunction with other information (for example, customer satisfaction).
monitoring of staff	Close monitoring of staff time and motion could lead to unnecessary stress on staff. The manager would need to establish what a reasonable customer service was per specified time. Speed, number and value of sales do not always represent an appropriate measure. Client satisfaction should be considered.

Students generally found this question difficult but most were able to state a concern relating to monitoring of staff and the potential stress associated with change. The better responses were able to relate their concern to the manager while the poorer responses tended to make generalisations rather than referring to the manager.

### Question 12a

Marks	0	1	2	3	Average
%	11	24	40	26	1.8

#### Recommendation 1

- If all library staff undertake the training at the same time there will be no one to operate the library
- Not all staff learn at the same rate and so some staff will be bored and some may get left behind.

#### Recommendation 2

- Three weeks before is too long from the starting date, and if staff do not use the skills learnt in this time they will most likely forget aspects of their training.

#### Recommendation 3

- All staff need an operating manual not a technical manual, as they are required to operate the software rather than fix technical faults
- A technical manual will not be user friendly for library staff. It will be hard to understand and will not include what they need to know.

In general, students were able to identify concerns with each recommended strategy.

### Question 12b

Marks	0	1	2	3	4	Average
%	24	27	29	13	7	1.5

The strategy must cover all areas and the expected responses included the following:





location	<ul style="list-style-type: none"> <li>trained on site so they are using a familiar setting</li> <li>trained off site so they are not distracted by normal duties.</li> </ul>
timing	<ul style="list-style-type: none"> <li>during opening hours so staff are trained as part of their normal duties</li> <li>before (or after) opening hours so that customers are not affected</li> <li>during the week before the system is to be changed over for customer use so staff know how it works before using it.</li> </ul>
provider	<ul style="list-style-type: none"> <li>the software developer should provide the training to ensure users operate the program efficiently</li> <li>a training company should be employed to deliver the training as they have expertise in teaching adults.</li> </ul>
method of delivery	<ul style="list-style-type: none"> <li>train the trainer – if the full-time staff are trained as a group they can then train the part-time staff in small groups, which creates less disruption for the business</li> <li>skill-based – two groups (sorted according to computer expertise) should be established and trained in the new system. This ensures the most efficient training, as those with more expertise are not waiting for other staff to understand the process.</li> </ul>

Surprisingly, a number of students did not use the prompts given in their response. Clearly, students who did not address the prompts did not receive full marks. Again, many students ignored the stem of the question ‘**explain** your recommended strategy’, and frequently **listed** their response.

Below is a sample response from a student that earned full marks.

*LOCATION – the training should take place at the Library store using the Library equipment. This way the staff know where to go and feel more comfortable with surroundings.*

*TIMING – the staff should have multiple training sessions to help them become accustomed to the new system. Training should take place at 9am when the Library store is closed to the public.*

*PROVIDER – the company should pay for the training and the EasyCat programmer should train the staff as they know how the system works.*

*DELIVERY – the training should be hands-on using the Library’s equipment so staff are learning in a situation comfortable and relevant to them. The training should be accompanied with user documentation relevant to the individual staff’s job and computer skills.*

**Question 12c**

<b>Marks</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>Average</b>
<b>%</b>	38	23	39	

Most students attempted to justify their answer, although many found this difficult. Some students did not answer the question. Accepted responses included:

**i**

As hiring videos is the major task that the staff members repeat numerous times each day, it is essential that all necessary steps to complete their work are clearly and accurately explained.

**ii**

As any staff member could be the last to leave at the end of the day, all staff need to know how to back up and exit the system so that the day’s data is not lost or corrupted.

**Question 13a**

<b>Marks</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>Average</b>
<b>%</b>	22	38	40	

The most common responses were:

- window measurements
- type/style of blind
- number of blinds.

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This was generally well handled. Some students, however, incorrectly listed an item such as the total cost, which would be calculated by the system, rather than an item of data input.

### Question 13b

Marks	0	1	Average
%	50	50	0.5

Students either handled this part of the question well or left it blank. The most common student response was to highlight that there is only one laptop and printer which all the staff must share, therefore restricting the ability to calculate quotes.

### Question 13c

Marks	0	1	2	3	4	Average
%	38	20	23	12	9	1.4

An accepted, full response is provided below.

Step	Explanation and example
Design	<ul style="list-style-type: none"> <li>In this step, the processes to be undertaken are represented by using some form of design tool such as flowcharts, Input-Process-Output (IPO) charts and layout diagrams.</li> <li>Top Shades should create a layout diagram showing how the quote will look on an A4 printed page and a flow chart showing the steps to be undertaken to create the solution.</li> </ul>
Test	<ul style="list-style-type: none"> <li>During testing, the solution is tested to see if it accurately processes data. Real output will be compared to expected output.</li> <li>Top Shades will be entering 'dummy data' into the system to see if it accurately calculates the quote cost by comparing it to the manually estimated cost.</li> </ul>

This was the most disappointingly answered question on the paper. Conversely, it worked extremely well in spreading student results, with the high achieving students doing well on this question and the low achieving students scoring poorly.

The responses indicated that students could often not explain what occurred in the steps of the problem solving task and consequently could not indicate what Top Shades would do in their quoting system. Two or three word responses were common, such as 'Testing means testing the solution'. This is not an adequate response when students were asked to explain. Students consistently mixed up testing and evaluation and wrote that 'testing involves surveying customers to see if they liked their blinds'. Similarly, the difference between design and development was not demonstrated by students.

### Question 13d

Marks	0	1	2	Average
%	10	34	56	1.5

Students generally handled this well, with the most common response being

**i**

Solution: folder – templates

**ii**

Quotes: folder – clients

### Question 13e

Marks	0	1	2	3	Average
%	9	20	45	25	1.9

Difficulties:

- you cannot easily retrieve a quote, as you cannot identify the client with this naming system

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- the numbers would not be in order if the file was sorted and so the staff member may try to use the same number again or overwrite a file accidentally
- staff members may not use the next number if there are lots of quotes completed as it is hard to see where the numbering system is up to.

#### Recommendation:

- the most common response was to use the client's name and/or the date and/or staff member's name
- a more appropriate naming system would be to use part of the client's surname with a date; for example, for Mr Smith with a quote on 10 July 2004, the filename would be 'smit100704'.

Again, the most common problem students had with this question was identifying a second difficulty that was different from the first. Repetition was the reason most students didn't get full marks for this question.