



2005 Information Processing and Management GA 3: Written examination

GENERAL COMMENTS

Teachers should note that the comments made in this report are based on the *Information Technology VCE Study Design* accredited for 2003–2006.

Overall the student responses to the examination were very pleasing. Almost all of the students attempted all of the multiple-choice questions, and the range of scenarios in Section B of the paper allowed students to demonstrate the breadth of their understanding of the key knowledge associated with the Study Design. Students who found a particular scenario difficult or who misinterpreted a scenario were able to respond successfully to other scenarios. It was pleasing to see that when asked for two reasons or three features, etc., students gave the correct number of responses. This practice has improved over the last two years and students are obviously being instructed to read the questions carefully and correctly use the answer format provided.

The examination paper tested a wide range of the key knowledge points from the Study Design and it was evident in the students' responses that teachers had covered the course content well. However, it was also clear that many students found it difficult to explain, discuss or justify their responses – those students who could were rewarded with better marks. This was particularly evident in Question 11c. where students were asked to discuss two reasons why the teachers would be unhappy with the proposed system and in Question 12b. where students were asked to justify their recommended strategy for implementing changes. Students must be familiar with key words such as 'outline', 'explain', 'discuss' and 'justify' and understand that these words require longer responses than 'identify' or 'list'.

Students continued to repeat the same point when asked to discuss or give multiple reasons relating to a scenario. This was noticeable in Questions 2, 4b., 6, 10b. and 11c. For example, in Question 4b. students would explain the use of a hyperlink and then, when giving the second feature, would say they would have a link that went directly to another location. Clearly, students were explaining the same feature.

Although teachers had clearly taught the content of the Study Design, students with lower marks found it difficult to select the appropriate knowledge required to respond to a particular scenario. For example, in Question 12d. some students did not realise that the size of the organisation and the large amount of data that would be stored on a regional server meant that a CD should **not** be the recommended backup medium. Students who scored full marks in questions were able to clearly demonstrate that they not only understood the key knowledge but could also apply it appropriately to specific scenarios.

SPECIFIC INFORMATION

Section A – Multiple-choice questions

Students generally handled this section successfully, with very few not providing responses to all of the questions. 'Project Management' was presented in a different format this year and the distracters proved effective. Similarly, in Question 19 students were distracted by the efficiency objective. In general, the best distracters were terms that appear in the Study Design, as can be seen in the results for Questions 3, 8 and 16. Due to the ambiguity of the question, all responses were accepted for Question 5.

Question	% A	% B	% C	% D
1	5	7	83	4
2	27	8	3	62
3	42	18	34	5
4	2	1	82	15
5	7	6	9	77
6	9	87	1	3
7	86	4	4	6
8	4	21	64	11
9	2	8	88	1
10	75	4	11	10
11	4	14	17	65
12	3	1	45	50
13	12	62	6	21

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Question	% A	% B	% C	% D
14	4	13	76	7
15	2	3	1	94
16	47	37	6	9
17	87	3	7	2
18	6	5	8	80
19	8	53	21	17
20	15	13	38	34

Section B – Short-answer questions

Question 1

1a.

Marks	0	1	2	Average
%	14	27	59	1.5

Some common responses were:

- do not write it down
- use both letters and numbers
- require passwords to be at least six characters in length
- require passwords to be changed regularly.

In general students handled this question well, with many using the cartoon to list a feature that would improve password security.

1b.

Marks	0	1	Average
%	28	72	0.7

The most common responses were:

- longer passwords are harder for hackers to guess as there are more combinations
- changing the password regularly means that if someone does guess the password they will not be able to access the account for very long before the password is changed.

Students generally handled this question well.

Question 2

Marks	0	1	2	Average
%	36	40	24	0.9

Common responses that were awarded marks included:

- add a customer ID field
- separate the customer's name into two fields
- standardise the format of the phone field.

Students found it difficult to suggest two changes to the design that would make the file more efficient, although most students were able to suggest one. Repetition was noticeable in many responses. Marks were not awarded to students who wrote about how they would use the file rather than how they would change its design.

Question 3

Marks	0	1	2	3	4	5	6	Average
%	6	7	14	24	36	9	5	3.2



	USB Flash Drive	DVD (RW)	Internal Hard Drive
limitation	<ul style="list-style-type: none"> requires a USB port limited storage capacity more expensive per MB if using Windows 98, must download software easy to lose 	<ul style="list-style-type: none"> slow data recording rate can be damaged; e.g. scratched may not be portable 	<ul style="list-style-type: none"> not easily portable (remains with computer) cannot transfer files if not on a network
capability	<ul style="list-style-type: none"> data can be deleted and/or rewritten device is portable plug and play can be locked and password protected 	<ul style="list-style-type: none"> capable of storing large files (e.g. movies, music) data can be deleted and/or rewritten DVD can be played on a home theatre system (non-computer) 	<ul style="list-style-type: none"> large storage capacity – usually 10 GB plus data can be deleted and/or rewritten can be partitioned into several drives
method of recording data	<ul style="list-style-type: none"> data stored in flash memory digital data on a memory chip 	<ul style="list-style-type: none"> data is encoded optically as digital data data recorded by laser 	<ul style="list-style-type: none"> data recorded magnetically as digital data

This question clearly spread the students. The majority of students were able to identify a limitation and a capability of the device selected, but only the high-scoring responses were able to identify the method of recording data. Some students wrote about a DVD disk and others about a DVD drive – both responses were accepted.

Question 4

4a.

Marks	0	1	2	Average
%	28	22	50	1.2

The most common responses were:

- grouped by channel
- grouped by day
- grouped by time
- grouped alphabetically
- grouped by type of program (e.g. comedy).

This question was generally handled well by students who could suggest at least one way of grouping the detailed information.

4b.

Marks	0	1	2	3	Average
%	47	25	17	11	0.9

Expected responses included:

- search facility – allows the user to quickly find specific programs or information
- hyperlinks – allows the user to go to detailed information; for example, movie reviews
- video clips – allows the user to view short clips of the program if interested.

This question was more challenging, as it required students to consider and explain three features they would include in an electronic guide. It was disappointing to see a number of students answer this question with single words such as readability and presentation. Single words without an explanation were not awarded marks.

In general Question 4 challenged students and it was disappointing to see the number who provided no response to all or part of the question.

Question 5

Marks	0	1	2	3	4	Average
%	4	4	8	21	64	3.4

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	Digital camera	Flatbed scanner
software	<ul style="list-style-type: none"> photo editing software specific software; e.g. PhotoShop, Paint Shop Pro 	<ul style="list-style-type: none"> OCR software specific software; e.g. OmniPage, Adobe Photoshop
manipulation	<ul style="list-style-type: none"> crop the picture change the colours to enhance an image. 	<ul style="list-style-type: none"> crop the area to be scanned
storage	<ul style="list-style-type: none"> jpg file or jpeg bmp or gif 	<ul style="list-style-type: none"> bmp file text file
output	<ul style="list-style-type: none"> a photograph image on camera screen 	<ul style="list-style-type: none"> printed image Word document with scanned file embedded

Students found this question very straightforward as they only had to state, identify or name items. Hence, very short responses were able to provide sufficient information to receive full marks. Although the question said ‘describe one way in which the data could be manipulated’ students did not do this; however, as most had clearly identified a process, it was decided to award the mark for the identification. The vast majority of students selected the digital camera.

Question 6

6a.

Marks	0	1	2	Average
%	27	39	35	1.1

The most common responses that were accepted were:

- the width or size of the receipt roll
- printing only in black
- size or quality of any images to be used.

Many students did not understand the word ‘constraint’ and talked about shoppers throwing out docketts and not reading the back of docketts. Students had a tendency to repeat responses and marks were not awarded for the repetitious part of the answer.

6b.

Marks	0	1	2	3	Average
%	31	31	20	19	1.3

Input task	Process task	Output task
<ul style="list-style-type: none"> acquire logo find text find images 	<ul style="list-style-type: none"> resize logo format text font and size arrange text and image change images to single colour sequence advertisements 	<ul style="list-style-type: none"> print individual advertisements preview advertisements on screen print the group of ads for the roll print sample of receipt roll

Most students were able to identify an output task but very few could list an input or processing task related to creating the advertisements.

Question 6 clearly separated the students who achieved higher scores from those who did not score as well, although again it was disappointing to see that some students did not respond to the question.

Question 7

7a.

Marks	0	1	2	3	Average
%	15	22	34	29	1.8

Privacy legislation requires that the client be informed of how the organisation uses the data they collect. The document provides the client with this information. The first statement is included to inform the client how personal details are used within the organisation, which is required by the legislation. The second statement is included to inform the client

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that their personal details will be provided to other parties and identifies these parties so that the client is informed about the use of data collected.

The majority of students related the material to the legislation; however, some lost marks due to repetition rather than responding to the separate components.

7b.

Marks	0	1	2	Average
%	21	28	51	1.3

Possible answers included:

- encryption – encrypting the data before transmission protects the data if it is intercepted by unauthorised users
- send an encryption key separately – encrypted data can only be decoded if the key is known. Sending it separately means that two messages must be intercepted.

Students were awarded full marks for either identifying two appropriate actions that could be taken by the company or for identifying one action and explaining why this action was taken.

Students found Question 7 fairly straightforward and teachers had obviously covered this section of the course in detail.

Question 8

Marks	0	1	2	3	Average
%	3	5	21	71	2.6

Recommendation

System 1

Justification

- Memory: System 1 has 1 GB RAM whereas System 2 only has 256 MB. Jenny wishes to create videos, which run faster with more memory, therefore System 1 would be better.
- Hard drive: System 1 has 120 GB whereas System 2 has 40 GB. As video files are large files, it would not be long before System 2 ran out of storage space.
- DVD drive as opposed to CD drive: a DVD drive is a better option for burning videos as it is capable of storing a larger quantity of data and is the most common medium for storing movies.
- LCD monitor as opposed to CRT screen: an LCD monitor gives a better image and is easier on the eyes than a CRT screen. It has a bigger viewable area for the same dimension.

The two systems shown in this question clearly had different purposes. It was expected that students would be able to distinguish the requirements needed for large video files. Students did pick the correct system and almost all students were able to relate their justification to the scenario. For full marks it was expected that students would link the feature to Jenny's requirements. The vast majority of students gave two of the expected responses shown above.

Question 9

Marks	0	1	2	3	4	5	6	Average
%	35	6	11	13	9	9	18	2.6



Validation technique	Test description	Test data to be used
range check (e.g. sets limits to the data) or IF statement	Accepts data that is within the specified range and rejects any data outside this range.	2999, 3000, 3567, 4134
input mask	Allows only data that matches the mask to be entered. Mask is 3, number, number, number.	3456, 336, 3ps, 55
existence check	Checks whether there actually is data in the field. Does not allow the user to progress if the field is empty.	3456, press enter without making an entry, trip
data type check (e.g. only allow numeric data)	Accepts data only of the type is specified. If postcode is entered as numeric, it will only accept numbers.	3456, 9876, 765, t76u

Many students did not attempt this question or only attempted one of the techniques. Students generally found it difficult to name a technique, and marks were awarded for a correct description of the technique where a name was required. Many students repeated the same validation technique and no marks were awarded for the repetitious response. Many students who were able to identify a technique and describe what it did were unable to indicate appropriate test data. Test data should have included data that would and would not be accepted.

Question 10

10a.

Marks	0	1	2	Average
%	13	27	61	1.5

The most common responses from students were:

- lack of protection from unauthorised users on the Internet
- no firewall to keep out hackers or unauthorised users
- no indication that files are protected when being accessed over the dial-up connection
- no indication of virus protection software being used, and files are being sent and accessed via the Internet and email
- the physical security for the server or security cables for the computers to prevent theft of the equipment.

The majority of students handled this part of the question successfully by identifying one physical and one electronic security issue. This part of the question only needed students to identify the issue rather than explain it, and security had clearly been well covered by teachers. A small number of students repeated themselves regarding access by unauthorised users.

10b.

Marks	0	1	2	Average
%	38	44	18	0.8

Listed below are some of the expected responses, with the first three being the most commonly identified by students:

- urgent task needing to be done by Aloha, so technician unable to access computer/computer network
- required spare parts not available
- a lot of requests made of the technician when he arrives
- not enough time to complete the tasks
- method used for prioritising tasks
- software support requests
- interruptions from company through mobile phone calls asking for assistance
- task (e.g. repairs to server) needs network taken down and cannot occur at that time
- the fault may take longer than a morning to find
- arrives late from previous job
- distractions in the workplace
- doesn't know how to fix the problem once located.

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Students found this part of Question 10 more difficult and frequently missed the specific direction in the question which required them to identify two constraints that would prevent the technician from completing his job in the time allocated. A common incorrect response was to say 'there should be more than one technician'.

10c.

Marks	0	1	2	Average
%	37	14	49	1.1

Support service	Explanation
Helpline	<ul style="list-style-type: none"> Aloha needs someone they can contact immediately to ask questions of or to give suggestions on how to rectify hardware problems. A help line would allow Aloha to check and fix simple hardware problems rather than leave them for a week until the technician is present.
Website – FAQ, email	<ul style="list-style-type: none"> Many problems are common to users of hardware and an FAQ section on a website may quickly provide the answer to a problem or guide the person through what to check. Providing an email contact with a guaranteed reply time should allow Aloha to solve/rectify simple hardware problems or to eliminate certain possibilities between the technician's visits.
Software support	<ul style="list-style-type: none"> Providing support for network software, installation, updating and maintenance would put less of a burden on Aloha to have its own IT specialist. Providing software support for Internet and email setups would ensure safe and secure access to Aloha's network and reduce the need to have a software specialist within the company.
Documentation (troubleshooting guide)	<ul style="list-style-type: none"> Providing documentation to Aloha allows appropriate action to be taken by the users between technician's visits. Providing some simple instructions on the wall near each machine will allow for simple troubleshooting to be done by Aloha's staff between the technician's visits.
Training	<ul style="list-style-type: none"> The new hardware may be unfamiliar to some or all of the staff at Aloha, so providing training ensures the hardware is used correctly. Training in how to use the Internet effectively would be cost effective for Aloha as this is a new service and not all staff may be familiar with the way it has been set up.

There were very few students who could not identify an additional support service, and most students explained what the service would provide or justified why the service was needed. Students were not awarded for marks for suggesting 'extend the hours of the technician' as this was not an additional support service.

Question 11

11a.

Marks	0	1	Average
%	23	77	0.8

Answers included:

- it will take too long if the whole class (approximately 25 students) all want to order their lunch and there are only two computers
- if one computer is not working then it could take too long for that class to place their orders
- having only two computers, which must also now take lunch orders, to serve a classroom means that they cannot be used for educational purposes at the start of the day
- students could spend a lot of time on the computer while they decide on what they want for lunch.

Students were able to successfully identify that two computers would not be enough if everyone in a class of 20 to 30 students wanted to order their lunch.

11b.

Marks	0	1	2	Average
%	25	28	47	1.2

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Paper-based	Screen-based
<ul style="list-style-type: none"> • can have it beside the computer when completing the task • can be written on if it was not clear to the students what to do • can be shared between students • can be stuck on or beside the computer • can be taken home so parents can view and practise with the child • easy to reproduce (photocopy) • easy for students without computer skills to use 	<ul style="list-style-type: none"> • cannot lose the instructions as with paper-based ones • teachers can go through the help with students using a data show • the on-screen documentation could be both visual and auditory, which would assist primary age students (telling them what to do, not just showing them) • can be loaded onto website • reduces rubbish around the school – environmentally friendly

While this part of the question was generally handled well, a small group of students wrote about using the program rather than about user documentation. No marks were awarded for this type of incorrect response. This question was worth two marks and it was expected that students would give two reasons for their choice.

11c.

Marks	0	1	2	3	4	Average
%	9	11	37	14	28	2.4

Reason	Explanation
Increased workload (extra duties)	<ul style="list-style-type: none"> • Teachers have had extra duties added to their job without apparent consultation. • Teachers now have to collect money and confirm orders, tasks that are unrelated to teaching students, which is what they were employed to do.
Disruption to classroom (educational) activities	<ul style="list-style-type: none"> • Students may not get orders in before school and so will have to place their order during class time. • Mornings are the most productive and receptive time for student learning and this is being disrupted by the lunch ordering process. • Class time is being wasted on tasks that should be done before school or at recess.
Limiting of computer use for educational purposes	<ul style="list-style-type: none"> • Since ordering can only be done on the computer, the computer is tied up in the morning and cannot be used by the students for educational purposes, which is what has previously been the case.
Liability	<ul style="list-style-type: none"> • Teachers should not be responsible for collecting money. If the money is incorrect when it gets to the canteen, who will be held responsible – the teacher? • Since teachers were supposed to collect the money and then confirm the order, what happens if they did not pick up an error – will the teacher have to make up the difference?
Current system works well	<ul style="list-style-type: none"> • Teachers do not like unnecessary change and if the current system is working adequately they would be unhappy about changing it. • Teachers will not like change as they will need to teach the students how to use the new system.

Students found it difficult to discuss or to explain their reason, as asked by the question. Students frequently obtained only two of the four marks because they gave two reasons without discussing them or discussed one reason well but were unable to provide a second reason

11d.

Marks	0	1	2	Average
%	22	38	40	1.2



Advantages	Disadvantages
<ul style="list-style-type: none"> • System printouts of orders for packing reduce the need to read children's handwriting. • Stock is easier to control as the system can list what has been used. • System printouts can be sorted and totalled by the computer to check monies paid. • System printouts can be sorted to assist with placing receipts on lunch packs. • Takes less time to determine daily stock requirements. • Less cash handling as this is now done by teachers. 	<ul style="list-style-type: none"> • Additional task of putting a receipt on each bag for the student to take home, which has to be done in the same time previously only used to make the lunches. • Orders come in piecemeal as they are individually confirmed. • Manager has to learn a new system – how to use the network, how to sort and how to print the necessary reports and receipts. • If the network is down how will lunch orders be provided to the manager?

For a two-mark question this turned out to be very effective in spreading students, because high-scoring students related the advantage and disadvantage to the canteen manager as was required. Marks were not awarded for advantages and disadvantages that impacted on teachers and students, which was a common error in this question.

11e.

Marks	0	1	Average
%	40	60	0.6

Number	Task
1	write specification proposal
5	train teachers and manager
4	produce user documentation for training
2	install new software, hardware and cabling
3	test software on new equipment
6	evaluate project

In general students were able to apply their knowledge to the case study in Question 11. The exception was in part c. where many students found it difficult to discuss, rather than just list or to identify two different reasons.

Question 12

12a.

Marks	0	1	2	Average
%	29	46	25	1.0

Time	Method
<ul style="list-style-type: none"> • One month should be long enough to identify any operational problems. • Since a parallel changeover is costly, limiting its length is important. • Gives an adequate amount of time for staff to learn the new system. 	<ul style="list-style-type: none"> • Given that the organisation does not want operations to be disrupted, a parallel method of changeover will mean that if the new system doesn't work then the old system can still be used. • It is the best method for minimising disruption, which is important for Eldorado. • It is costly, but is not being done for long so it is manageable to ensure no disruption.

The most disappointing feature of responses to this question was the number of students who did not address **both** time and method, even though the question directed them to these two specific areas. Students could generally answer the question, but the most common reason for only receiving one rather than two marks was that the students had only addressed the method and had not explained why it was only for one month.

12b.

Marks	0	1	2	3	4	Average
%	25	13	38	8	16	1.8



bi. Location of training

Strategy	Justification of strategy
Individual stores	<ul style="list-style-type: none"> • Users will feel more comfortable in familiar surroundings. • Staff can use familiar data from their own store.
Each regional centre OR Head office	<ul style="list-style-type: none"> • Key people, e.g. managers and sales staff, can be trained in like groups for the functions they need to carry out. • Fewer centres need to be set up for training prior to the installation. • Trainers only need to go to regional centres, not all the individual stores.
Software company's premises OR Other training centre	<ul style="list-style-type: none"> • One system can be set up and staff trained before the parallel run starts. • More options of training times for staff to select from, as several training sessions would be needed. • Staff are exposed to an example of the system operating perfectly – important for positive view of program.

bii. Ergonomic requirements for users

Strategy	Justification
Provide ergonomic furniture (any item accepted)	Users may suffer injuries such as repetitive strain injury if the furniture and equipment is used constantly and is in an incorrect position.
Purchase adjustable chairs	More than one person will use the terminal and each person will be of a different height, therefore it is important that an adjustable chair is used to enable staff to be at the right height when using the terminal.
Document holder	The use of a document holder for data entry ensures the head, neck and eyes are in the right position and thereby reduces the possibility of injury or strain.
Check and adjust lighting	Correct lighting is important to avoid eye strain, which can lead to headaches.
Gel pack wrist supports	A wrist support cushions the wrist and allows it to rest comfortably on the keyboard, reducing the risk of strains.

The four marks for this question were divided into one mark per strategy and one mark per justification. For part bi., a small number of students wrote about the type of training (for example, train the trainer) rather than the location of the training and these responses were not awarded marks. The term 'ergonomic' was clearly unfamiliar to a number of students and even those who had successfully responded to the location of training section often left the ergonomic section blank. Students who understood the term gave a wide range of possibilities for improving the users' work environment, from adjustable chairs to gel pack wrist supports, all of which were accepted.

12c.

Marks	0	1	2	3	Average
%	33	21	29	18	1.3

Method	Timing	Explanation
Comparison of sales (number or value)	Current month to previous month	Sales figures show an increase in the number (dollar value) of sales made.
Comparison of sales (number)	Current month to same month in previous year	Sales comparisons show that the sales in a particular month have increased from the previous year.
Record of system downtime	First one to three months of operation	The length of time in which the system was not operational was lower than the previous system.
Comparison of sales (range of items)	Current season to same season in previous year	The number of different items sold in each store for a particular month or season was higher than previously.
Comparison of time taken to process order	Current month to last month	Time taken by staff to complete individual orders is reduced.
Error log	For one to three months	Fewer errors are recorded in the same time on the new system.
Comparison of profit	Accounting period to accounting period	Profit for an accounting period using the same assumptions and practices shows an increase. This could be caused by increased sales or reduced costs.

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It was pleasing that students who attempted this question were generally able to identify an appropriate method that related to the case study. They were also able to link their recommendation to an appropriate time frame. However, many students did not explain specifically why it would be undertaken at that time and tended to give a generic response. It was disappointing to see the number of students who did not attempt any of this question.

12d.

Marks	0	1	2	3	4	5	6	Average
%	23	9	13	12	15	11	16	2.9

	Explanation	Justification
Timing	Backup to start at a consistent time, such as 10 pm, after the stores close.	Backups should be done after stores close to ensure there are no disruptions or slowing of the network.
	Full backups should be done weekly with an incremental backup done daily. Backup should be done after hours.	Completing full backups once a week and incremental backups daily saves time when completing the backup and saves space on the backup medium.
Storage location	One backup should be stored off site in case of a disaster. Another backup should be stored in a fire-proof safe on site.	As the backup is for a regional server, if this computer were to go down or be destroyed it is crucial that the data is in another location. The computer can be replaced quickly and restored if the data has not also been destroyed.
	Backups should be stored off site in a fireproof safe.	Off site storage is needed so that if a disaster or theft occurs the backup is not destroyed or stolen.
Media to be used	Tapes should be used as they are easily portable to take off site.	Tapes should be used as the size of the backup required for each regional server would be large and tapes are affordable, reliable and can be used many times.
	Portable hard disk array	A copy of the data is stored electronically and can be easily removed and stored off site.
	Mirrored site in a different location	A disaster recovery site that has a mirrored version of the system so that if one system goes down the mirrored site can be used to restore the system.

Most students were able to identify a strategy for each of the three areas listed but found it difficult to justify their strategy or left out the justification. It was disappointing to see students give what appeared to be rote answers to the media to be used. Given the size of the organisation described, CDs were not considered to be an acceptable backup media. Students interpreted 'timing' in two ways—the time of the day and the frequency of the backup—and both were accepted. It was expected that students would address both in their response but, provided the student addressed and justified either component appropriately, full marks were awarded.

All parts of Question 12 required students to explain or justify and as a result this question clearly separated students. As indicated in the General Comments above, the more capable students were able to explain and justify but low-scoring students found this question challenging and often left parts of the question unanswered.