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 Study Design*, 2000–2002. A reaccredited study design has been implemented in 2003.

In 2002 the paper consisted of 15 questions with more questions than last year in the 2 to 4 mark range. In general, students coped well with the format of the question and answer booklet and attempted most questions including the more extended-response questions at the end of the paper. Providing a number of scenarios allowed students who misinterpreted a particular question to score on the other questions on the paper.

Overall, student responses were very pleasing and they were able to identify advantages and disadvantages of case study material presented. This was particularly evident in the responses to the case study on Valley View Secondary College. Fewer students rewrote the question in their response and the spaces provided in the booklet appeared to be sufficient.

The paper provided a spread of scores with the lower scores pertaining to the students who usually were unable to explain their answer or who when asked for two reasons gave the same reason twice. In 2002 there were two questions where students were asked to make a selection from a number of options provided (Question 5b and Question 9b). A number of students felt that all options must be put somewhere in their response or left the question blank. Teachers and students should note that the question stem indicates the type of response required (refer to the *Revised VCE Studies 2000, Implementation Resource Kit, Technology* (p. 52) for definitions of question stems). The inclusion of more questions requiring students to explain or discuss their response effectively spread students and allowed those students who could apply their knowledge to a particular scenario to obtain the higher scores. Carefully reading the questions is essential – some students did not pick up on what the question asked and responded by quoting related theory studied in class.

The inclusion in the 2002 paper of a six-mark question (Question 15) requiring a longer response within a set structure was successful, as it clearly indicated to students what was required in the response. The ability to explain each threat and strategy discriminated the higher achieving students, yet all students could identify threats. Potential threats to the stored data and information and the strategies to minimise these threats had been well covered by teachers.

SPECIFIC INFORMATION

These responses to the questions represent expected or common responses and are **not** an exhaustive list.

Question	Marks	%	Response
Question 1	0/1 1/1 (Average mark 0.61)	38 62	The expected response to this multiple-choice question was: • was produced in colour instead of black and white.
Question 2	0/1 1/1 (Average mark 0.44)	55 45	Students selected a wide range of software tools for this question which reflected the diversity of software being studied across the state. Spreadsheet and FrontPage were the most common choices made by students. Of concern were the students who selected Word Processing and responded with a spell check which validates data rather than produces information efficiently as indicated in the question. A small number of students selected copy and paste when the question indicated that this should not be used. 　An example of a student response is: 　　Spreadsheet example: MS Excel. I used fill down to copy a formula to calculate quantity times price over seven rows of an invoice. This meant I didn't have to type in the formula seven times and the references all adjusted automatically.
Question 3	0/2 1/2 2/2 (Average mark 1.16)	14 55 31	Students generally responded well to this question, although a number gave the same answer twice. Most common responses were: • large attachments take too long to transfer • large attachments can take up too much of the bandwidth available to an organisation and may cause the email to time out • cost of download – the larger the attachment the more time it takes and the higher the cost • Internet Service Provider (ISP) may restrict sizes of emails that are acceptable • if the line drops out the whole file needs to be sent again.

Question 4	This question was presented differently to similar questions in previous papers. While students should have been familiar with the hardware, many were unable to provide the correct responses. It was disappointing that a small number of students responded to the effect that the empty connections were for attaching a mouse or a keyboard.	
	a 0/1 70 1/1 30 (Average mark 0.29)	The expected responses are: firewall, hub and print server.
	b 0/1 37 1/1 63 (Average mark 0.62)	The expected responses are: The empty connections are to enable other items to be connected to the network (e.g. computer workstations or shared peripherals).
Question 5	Whilst this question was intended to give the students the opportunity to explain the strengths and weaknesses of interviewing as a means of gathering data, it was frequently interpreted by students to mean the strengths and weaknesses of gathering data from the current staff. This was acceptable and most students were able to demonstrate their understanding of data acquisition as part of the System Development Life Cycle. Some expected and common responses are indicated below. Responses related to customers were not accepted as the question indicated it was an internal email system. A number of students inappropriately felt that for part b all six items had to be either analysis or design.	
	a 0/2 19 1/2 34 2/2 47 (Average mark 1.27)	Strengths • you can follow up any comment made and have it explained in more detail making the data gathered more useful • you obtain first-hand data rather than data that someone else has collected and interpreted • you can sense the feelings of staff through body language as well as verbal responses • staff opinions can be recorded as they can identify their own requirements and will feel that they are part of planning the new system. Weaknesses • staff members could be limited by not knowing what possibilities are available in the market place that could assist them to improve their productivity • staff may not fully trust an outside person and so may not respond with their real views • staff may use it as an opportunity to complain and make the situation sound worse than it is • inefficient use of resources (interviewing is a time-consuming method of data acquisition).
	b 0/2 45 1/2 20 2/2 36 (Average mark 0.9)	Analysis Document the procedures of the current system Design Draw up the necessary input/output screens

Question 6	0/2 66
	1/2 11
	2/2 23
	(Average mark 0.56)
		Students either knew what a design technique was and scored full marks or saw the word design and interpreted it incorrectly to mean the design phase of the System Development Life Cycle. Some common responses were:
		A storyboard:
		    I would use a storyboard as it allows Plans Plus to see each page that will be created and to see how these will link together.
		Hierarchy Chart, Structure Chart, Site Map:
		    I would use a hierarchy chart, structure chart, site map to show how the homepage links to other pages and the navigational paths available to the user.
		Layout Mockup, Page Layout Design, Screen Layout, Output Layout:
		    I would draw up a mockup of the layout of all the pages so the company can see not only how the site links but how each page will be displayed.

Question 7	0/2 28
	1/2 38
	2/2 34
	(Average mark 1.05)
		Most students understood the requirements of this question but found it difficult to express them clearly. Teachers had obviously covered both the practical use of test data in checking solutions and the need for message testing of written documents. The question had two components within each choice and students who scored 1 out of 2 generally forgot to address one part of the question. Some sample student responses are indicated below.
		Part A
		    Test data is data that has been made up to check if the solution works, e.g. in a spreadsheet it checks the accuracy of formulas so you don't make miscalculations.
		    Test data is data that has a known solution. If the solution is not received you know there is an error in the system.
		Part B
		    To ensure that the information in the written documents is unambiguous and its message is clear and easily understood, the message can be tested by asking a person who was not involved in creating the written document to evaluate the clarity of the information.

Question 8	0/4 7 1/4 9 2/4 21 3/4 35 4/4 28 (Average mark 2.69)	This question was handled extremely well by most students. Clearly web design and web conventions have been thoroughly covered by teachers. Students who did not score full marks here generally forgot that the question asked them to recommend how to correct the problems. Listed are the most common responses: • a limited number of fonts should be used to improve readability A web designer could limit the fonts to two or three rather than have more than nine fonts on its homepage which make it very difficult to read. • Navigational Bars containing links should be in a consistent format A web designer should use one consistent format rather than three different formats on the navigational bar on the left of the screen – no underline, single underline and double underlines. • images used should be relevant to the company A web designer should remove images that have no apparent relationship to the company, e.g. a horse's head. • colours should be chosen that are easy on the eye and make the text easy to read A web designer should select colours that reflect the nature of the organisation and which are easy to read rather than the current selection which will make the text very difficult to read. • use of font size should follow a consistent pattern A web designer should make the most important item – the company name – in the largest font size and scale the font sizes down in relation to the text. • hyperlinks should be indicated by the use of a single underline A web designer should remove all underlines except on hyperlinks, which should have a single underline.

			• consistent placement of a navigation bar A web designer should only have one navigational bar on the home page and should determine the important links with the company to ensure appropriate items are included in the navigation bar. • all images need to come up The web designer should ensure that images are saved in appropriate locations to ensure that no boxes with 'x' in them showing a broken link would occur.
Question 9			Students generally found this question difficult. Only a small number could identify types of information systems and explain why a Wide Area Network (WAN) was chosen. Clearly teachers had taught students the difference between WAN and Local Area Network (LAN). However, geographical distance on its own was not an acceptable response. The question asked students to explain (not just list a reason) and students in general found it very difficult to explain their response.
	a 0/1 81 1/1 19 (Average mark 0.18)		A Transaction Processing System.
	b 0/2 40 1/2 31 2/2 29 (Average mark 0.88)		Tyson – operational Tina – tactical
	c 0/2 78 1/2 9 2/2 13 (Average mark 0.35)		Three different systems were accepted: A decision support system • could be used to predict sales of cold drinks for the next month based on current demand and expected weather conditions. This would assist in ordering stock. A stock control system • could be used to monitor the levels of stock in the store and automatically generate a list of stock that needs reordering when minimum levels are reached. An office automation system • could be used to send emails and faxes to all stores from head office.
	d 0/2 19 1/2 46 2/2 36 (Average mark 1.16)		The information would best be presented in **a graphical format** that could be produced weekly, monthly or quarterly for the CEO. The information could be produced in a **table format** for easy comparison of figures. Producing the results on a weekly, monthly or quarterly basis for the CEO would allow any trends to be identified quickly.
	e 0/2 32 1/2 44 2/2 24 (Average mark 0.91)		WAN versus dial-up modem • a dial-up modem would provide a slower response than a company WAN and since the register needs to constantly access the main server at headquarters, stores would have to wait too long for service • a WAN with a dedicated line will achieve better bandwidth than a dial up modem • a WAN could be a private network and so offer better security than a dial up modem using the Internet • a WAN is more reliable and less likely to drop out than a dial up modem link.
Question 10			This question was generally well handled by students and in part c if a student could use either visual representation correctly to calculate the critical path the student was awarded the mark. In part d students did not get a mark for simply responding with 'no'; however, a lengthy explanation was also not required.

	a 0/1 48 1/1 52 (Average mark 0.51)		A predecessor is a task that must be completed before another task can start.
	b 0/1 11 1/1 89 (Average mark 0.89)		Install benches (Task 5) **or** Install network cabling (Task 4) *OR* Copy computer image (Task 6).
	c 0/1 43 1/1 57 (Average mark 0.56)		7 days **or** 6 days was accepted.
	d 0/1 45 1/1 55 (Average mark 0.54)		No, the project cannot be completed on time since there is only one day slack time when installing the power points. This means the project would take one day longer if all other tasks take the expected time.
Question 11	0/4 33 1/4 1 2/4 8 3/4 26 4/4 31 (Average mark 2.21)		In general students scored well on this question and most students selected a form of biometric authorisation or a swipe card. They did at times have difficulty in finding a second advantage and simply reworded the same point. Marks were not awarded for repetition. A small number of students responded with the current strategy of passwords even though the question requested a different strategy or responded with encryption and audit trails, which are not methods of identifying users and so were not awarded marks. Typical student responses were: *Method:* biometric check – fingerprint or iris recognition Advantages: • users cannot login as another person even if they know the user name as everyone's physical characteristics are unique • users do not have to remember their password or change it regularly to ensure unauthorised users cannot access their account. Disadvantages: • unless there is a reason for high level identification to authorise users, the costs of the system are a major disadvantage. *Method:* smart card or swipe card Advantages: • the organisation can select who is given a card and personalise it • the business can set time and access controls into the card making the network more secure • users can just swipe a card and do not need to remember a user name and password. Disadvantages: • cards can be stolen and used by unauthorised users.
Question 12	Students could generally relate well to this scenario, which was set in a secondary college, and were able to discuss potential implications with the proposals. Some common responses were:		

	a 0/3 15 1/3 22 2/3 31 3/3 32 (Average mark 1.78)		Staff • the workload increases as reports are produced • two reports per term will mean adhering to stricter deadlines • as not all parents have Internet access teachers will have to provide reports in print and electronic format • the workload of computer staff may increase because of the need to improve website security • staff may not be skilled in how to upload reports or put reports online and so will need training.
	b 0/4 6 1/4 5 2/4 25 3/4 27 4/4 37 (Average mark 2.83)		Students • can work on projects at home by accessing files without needing to transfer to disk as some files may not fit • requires students to have Internet access at home • assumes all students have computers at home or may advantage some students • allows students more flexibility in completing work • students who are absent can collect assignments and homework after hours • students are able to access resources provided by the school at any time • students can no longer say they have no homework if there is some set. Parents • parents are able to check what work is expected to be done by particular classes • parents need to provide Internet access for children and some may not be able to afford it • equity of resources to students is an issue • homework set and due can be easily accessed and checked by parents.
Question 13	This question produced mixed responses from students. Part a. was generally handled well and most students described a problem related to the colouring in of the diagrams. Part b. was often misinterpreted to be about bookings on the new system rather than about user documentation. In part d. a number of students could list a problem but did not discuss it and responded by saying that *the training was too short* and not explaining why one two-hour session was inadequate. Part e. clearly discriminated the top students who could suggest a training strategy. Very few students appeared to understand the term 'strategy' and just indicated one aspect such as *the course should be run in the work place*. It was expected that students would understand that a training strategy involved more than this.		
	a 0/1 26 1/1 74 (Average mark 0.73)		Expected responses: Two staff may have booked the same seats at the same time if they only colour in the seats after taking the phone booking. • staff may forget to uncolour seats that are cancelled • a sales assistant may forget to colour in the diagram if there are constant phone calls leading to duplicate sales or an inaccurate diagram.

b 0/2 37 1/2 26 2/2 37 (Average mark 0.99)			Advantage: • electronic searching is faster than searching printed material when you have a particular problem you want to solve • electronic help cannot be lost or mislaid • it is better for the environment than printing a number of instruction manuals when most people only need to access a very small section of the help. Disadvantage: • access to electronic documentation is difficult as you cannot read about the system or its features when you are not on the computer • many users find printed material necessary and will print out the electronic material which could be more costly than providing printed materials originally • search words do not always bring up what you want • if LAN goes down you cannot access instructions to bring system back up.
c 0/1 41 1/1 59 (Average mark 0.58)			Record the number of sales made per day.
d 0/2 8 1/2 31 2/2 61 (Average mark 1.52)			The training suggested is not adequate as: • it does not address the fact that some users will have different levels of skills – the course offered is an introduction to computers • the length of the training program is too short – two hours is not adequate for beginners • staff may have other commitments, e.g. family and not be able to attend or be unable to get babysitters as the training session is in the evening.

<table>
<tr><td rowspan="3"></td><td>e
0/2   20
1/2   34
2/2   47
(Average mark 1.27)</td><td>More suitable training strategies should be justified in terms of some of the following components.</td></tr>
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e 0/2 20 1/2 34 2/2 47 (Average mark 1.27)	More suitable training strategies should be justified in terms of some of the following components.

Component	Justification
Content • related to their job tasks	• staff need to develop skills in using the specific software that they use to complete their job.
Timing • during the day • ongoing • as needed	• day time as all staff are more alert and PD should be provided to all staff costs the business to employ replacement staff • frequency of the training – a little often – consolidates the skills learnt previously.
Support • on going support via phone or email • in-house support	Provision of ongoing support to assist staff with any problems that might arise with the software or if some tasks are only done occasionally to assist with any problems that cannot be solved from the training.
Skill level • beginners • intermediate • advanced	All staff will be beginners on software so could do some sessions together However, not all staff will have had same exposure to computers so may need a staged program of instruction.
Method • train the trainer • in house	• train the trainer is cheaper and staff can learn at their own pace in a comfortable environment. • in house means that staff use the equipment they will normally use and are in a "safe" environment.

| **Question 14** | 0/4   6
1/4   9
2/4   31
3/4   20
4/4   35
(Average mark 2.67) | In general, students could identify two issues – although they were not always social issues. A small number of students repeated the same issue. The most common responses were:
Issue – Self-diagnosis and medication
Customers can put in symptoms and make their own selection from the medication suggested. There is no evidence of any current medication and customers may take medicines that will react with each other or simply take too many drugs. There is no limit to the drugs that can be purchased and equally the customer may purchase the drugs for someone else, e.g. a small child for whom the drug may not be suitable. Hypochondriacs can have access to enormous amounts of drugs which they do not require.
Issue – Privacy
There is no information here about how membership numbers are provided or how credit card details are secured when using the Internet. Nor are any assurances given that details of drugs purchased or symptoms entered are confidential and will not be passed on to inappropriate sources or secured against hackers. Ensuring privacy should be an essential element of this business and if a privacy policy is not available then customers should be concerned about how their information may be used. |

		Issue – Access to Drugs The company would appear to provide drugs that are only legally allowed with prescriptions to online users without a prescription. The ability of users to access such drugs without any monitoring could cause a rapid escalation in the drug problem within society and the mixing of drugs could cause serious consequences for individuals and for the health system.
Question 15	0/6 12 1/6 3 2/6 10 3/6 9 4/6 22 5/6 11 6/6 32 (Average mark 3.9)	There were very few students who could not list a threat although they often did not explain the threat or gave a generic threat rather than a threat related to the data. Strategies provided by students generally would have minimised the potential threat identified. The most common responses were.

Threat	Strategy
Equipment failure • a power blackout may occur as data is being written to the hard drive and the file may be corrupted.	Install an Uninterrupted Power Supply
File corruption/loss • a virus may get into the system and destroy some or all of the files.	Install and update anti-virus software
Crime – theft or arson • there may be a fire at your premises which destroys the computer and/or the backup tape • back up tape could be stolen from owner's desk.	Store a backup offsite Install fire alarms or a fire proof safe
Unauthorised access/hacking/sabotage • the system is entered by an outsider and data is stolen • unauthorised person gains access to the building and access files.	Login authorisation, e.g. login and password or biometric identification Security locks, surveillance cameras
Natural disasters • flood, fire, earthquakes, storms: leading to data loss and/or equipment loss.	Off site backup storage