

Information Processing and Management GA 3: Written examination

GENERAL COMMENTS

In 2001 the paper consisted of 18 questions. In general, students coped well with the format of the paper and attempted most questions. Students who did not understand one scenario or misinterpreted a question were still able to score well on the rest of the paper. This format, which has been used for the last two years, seems to work for students of this subject.

The use of lines to indicate the length of the response worked well, although students who rewrote the question before beginning their answer usually exceeded the space provided for the response. It is not necessary for students to repeat the question in their response.

The paper did provide a spread of scores with the lower scores pertaining to the students who were unable to explain their answers in the context of the case study material presented. Students who read the question stem carefully and provided clear explanations when asked to explain or discuss an issue, and could relate their response to the information provided in the question, obtained high scores. 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.

Responses to questions relating to what occurs at various phases of the systems development cycle were disappointing in the 2000 paper and Question 12 in the 2001 paper was again one in which few students were able to demonstrate a clear understanding of the design phase. It is expected that students can describe the processes that occur in the analysis, design, implementation and evaluation phases. However, it should be noted that when asked a specific question relating to implementation, most students were able to list changeover methods and justify their choice in Question 16.

The inclusion in the 2001 paper of a six-mark question requiring a longer response was a successful inclusion as it clearly discriminated the high achieving students who were able to clearly argue their points and yet allowed all students to respond to the issues raised. The risks associated with Internet usage were clearly areas with which students were familiar and could write about under examination conditions.

SPECIFIC INFORMATION

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

Question 1

The expected response to this multiple-choice question was:

Desire for increased competitiveness.

Question 2

Students were evenly divided in selecting Part A or Part B. However, students selecting Part B frequently listed two validation methods rather than explaining them as was required by the question. Marks were only awarded for the explanation of the validation methods identified by the students. The following response relates to the software tool, Microsoft FrontPage.

a.

Using a particular software tool, for example MS FrontPage.

Place cursor where image is to be inserted	Open graphics package
Select Insert from the menu bar	Open web package
Select Image	Go to graphics package and highlight image
Select file location OR find the folder containing the image, for example	Click on Cut or Copy
C:\user\ipm\images	Go to web package
Click on filename	Place cursor at insertion point
Click OK	Click on Paste
Resize image using handles as required	The image is now on the page
	Resize image as desired

b.

<p>Spreadsheet DATA VALIDATION – entered on a cell to limit input entry. (User is stopped and error message appears requiring user response) USE OF FORMULAS IF Statements – Test cells for limits and display message or result to the user based on the test. SPELLCHECK – words in the text are checked against the computer’s dictionary and unknown words are highlighted.</p> <p>Word Processor SPELLCHECK – (see spreadsheet) GRAMMAR CHECK – sentence structure is compared to predefined rules and correction/s indicated</p>	<p>Database INPUT MASK – entry of data is limited to a particular format and type as field will not accept other data types or formats RANGE CHECK – limiting data entry to possible values means data outside an acceptable range will generate an error message or require the user to check their entry FIELD DEFINITIONS – restricting the type of data that is allowed to be entered for example a numeric field will only accept numbers PRE-DEFINED LISTS – the user is only able to select from the options in the list provided therefore preventing any typographical errors</p>
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Question 3

Accuracy and timeliness were the most common responses to this question, but students selecting accuracy often found it difficult to explain. Students who used an example usually made a clearer explanation. Marks were awarded for the explanation, not for just listing the factors. Listed are some factors (other acceptable factors were meaning, appropriateness and relevance).

Factor	Explanation
Accuracy	input data needs to be entered correctly to ensure accurate information upon which to budget (for example entry of sales of 15 instead of 51 will cause expenses to appear too high) if input is inaccurate, resulting calculations will give untrue statistics or results (if test score inaccurate – unit average will be inaccurate).
Completeness	information needs to be complete to ensure appropriate actions can be undertaken (for example buying a used car without a mechanical report because you like the colour).
Timeliness	providing up-to-date information is essential (the right information at the right time) for the efficient running of the business.

Question 4

Students generally handled this question well. Common responses were:

- inappropriate furniture causes poor posture which leads to physical problems
- inappropriate desks and chairs cause physical problems such as muscular aches and pains
- spending too long in one position can cause long-term health problems
- sitting at a computer for long hours without breaks can cause health problems.

Question 5

Students often spent time explaining why the issue they identified was a concern when the question only required them to list the issue. Students who could list an appropriate issue, such as the ones below, were awarded the mark for this question.

- Invasion of privacy.
- Security (theft of data due to insecure transmission).

Question 6

Most students handled this question well and could select the least important data item. A small number ticked more than one item even though the question indicated one answer was required.

a.

Gender of student Other employer

b.

- pay slip/pay
- company materials, for example newsletter

Question 7

Whilst many students were able to identify the difference between the two types of documentation a number of students misread this question to be what would each user enter into the system and responded only with the fact that the users would enter the hours they had worked. This was clearly not the intention of the question and no marks were awarded for this response.

The expected response:

- the user only needs instructions on how to use the program, where to enter data and how to deal with error messages whereas the manager needs to be able to add users to the system, back up the system to maintain data integrity and fix faults.

Question 8

Project management involves more than just planning although this was the most common student response. The expected response should have included planning and monitoring, such as:

- project management involves planning and monitoring a project from start to finish
- project management is the setting of tasks, the provision of resources – physical, human and financial – and the monitoring of ongoing work to enable an organisation to meet a set target.

Question 9

This question was handled successfully by most students, although students who correctly answered parts a and c often could not identify that testing should have occurred in the empty box.

Expected responses:

a.

No impact.

OR It will not affect the critical path as there are 12 days slack time.

b.

Conduct the testing OR test the system.

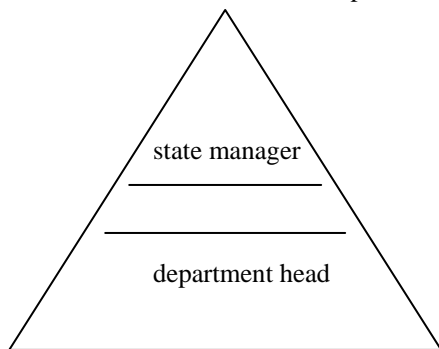
c.

Five days.

Question 10

It was disappointing to see a number of students who, when given the possible options to fill into the diagram, made up their own responses. Teachers need to reinforce with their students the need to read and highlight key words in questions. CEO was not one of the options on the list although it appeared in a number of answers.

a.



b.

Store Manager

- compare sales results of each department to see strengths and weaknesses of store
- compare sales to budget estimates to monitor progress towards achieving targets
- use to plan marketing and purchasing strategies

Department Head

- set targets for next week for own department
- make recommendations for stock advertising/discounts
- evaluate any strategies implemented in the last week

Question 11

Students found this question difficult and many were unable to identify a form of information. Those who could, generally understood the technical aspects associated with the transfer of the information. These are the terms used in the study design.

Form	Technical aspects
Moving image and/or Aural	disk space available to store file file size may restrict transfer (large files may be blocked) memory to run program/file bandwidth available required software to view video/listen to file correct version to view video appropriate hardware/speakers transfer rate may be too slow to download file in reasonable time slow modem will cause the transfer to take too long
Textual	suitable file format software to read file available

Question 12

Students found this question challenging and were often distracted by the placement of the design phase of the systems development cycle being embedded in a case study. More successful students were able to identify the intended response (the first one below) or responded in a more generic way (the second one). Many students were sidetracked and talked about the implementation of a database solution rather than responding in relation to the design phase.

- hand draw a flow chart and a sketch of how the output will be presented
- by producing alternative options and evaluating each option to produce system specifications which include input screens and output required.

Question 13

Students tended to waste a lot of space in responding to this question by writing all of the details of the record type selected before they responded to the strategies to be used. Many students did not address both issues (security and integrity) and full marks were only awarded if both areas were addressed in the students' response.

Record Type	Strategies
Financial Personnel contact details and employment history Stock Lists	Security log on strategy – user ID and password controlling entry to system and software availability, giving users read/write access to files, controlling level of access to the system of each user audit log strategy – keep a record of who made the changes and when Integrity back up strategy – daily back ups on a rotating basis so that a week's backups are available disk mirroring strategy – run a duplicate hard disk for backup data entry and record viewing restrictions – only stipulated staff in a department can alter records but all staff can view records

Question 14

This question was generally handled well by students who commonly responded with inconsistencies, skills or concerns regarding the timing of completing the pages. Most students were able to identify an appropriate person to test the website but could not always give an appropriate reason for their choice. Many explanations were too brief, such as 'The customer because they use it'.

a.

Weakness	Explanation
Inconsistency	no corporate image no consistent placement of data inconsistent fonts
Internal links	inconsistent presentation inconsistent placement no whole site feeling
Testing	integrated testing not possible in early stages is ad hoc as pages are completed at different times and may be incomplete as some links may not be ready to test or available
Student Skills	some students may be able to produce better products some students may not have the skills to meet the departments requirements
Time	some pages may be finished earlier and be waiting for other pages to link together difference in completion times may hold up launch of website time management is a problem – no deadline set (lack of timeline)

b.

System Administrator

- has the expertise to identify problems/errors quickly.

Customer (Artist/Teacher/Student)

- to check that the interface is user friendly.

Department Head

- would know if information is accurate, complete and presented as requested.

Question 15

Most students related well to the scenario provided here with the exception of part d. Students found it difficult to identify and give two functions of an active hardware component.

a.

- to provide high quality medical services to the local community.

b.

- Medicare number/date of birth/name
- unique ID created by the hospital on first admission.

c.

Doctor's qualifications Operating Theatre bookings Patient X-Rays

d.

Component	Function
Switch	Allow several users to send information over a network at the same time. Allows different nodes to communicate directly with one another. Allows each node to have access to full bandwidth of cable capacity.
Hub	Receives computer signal from a workstation and transmits it to several workstations. Receives a signal and transmits it to multiple points.
Router	Examines packets and decides the route it will take between networks. Selects where and how to send a message.
Modem	Converts analog signals to digital and vice versa. Allows computer signals to be sent over the telephone network. Allows computers connected to the network to send messages to each other.
Server	Allows for software to be stored and shared centrally. Allows for files to be stored in one location and accessed by all workstations. Allows users to share hardware on the network, for example printers, scanners.

e.

Incomplete data – doctor called for an emergency and does not complete entry.

Data entry skills – doctors lack training and so are slow and prone to error.

Cost/benefit to hospital – data entry operator is paid less than a doctor.

Question 16

In general, this question was handled successfully by students and most were able to identify two different changeover methods – although the correct terminology was not always used. Students who correctly explained the changeover method were given the mark even if the correct name was not supplied.

a.

- staff survey
- historical records (of past purchases)
- staff interview
- staff discussion group
- company goals related to it
- hardware requirements of software the company wishes to use
- direct observation.

b.

- to enable a cost benefit analysis or to see which option gives best value for the money spent
- to ensure that the option selected will meet the technical requirements of the user
- to involve the staff in the decision-making process so they ‘own’ the decision as they currently have all different types of computers.

c.

Method	Justification
Direct conversion	<ul style="list-style-type: none"> • everyone gets new equipment at once so no favourites or having to set up a hierarchy of employees • can have training together.
Phased in conversion	<ul style="list-style-type: none"> • less disruptive to the business • can operate stand-alone initially and then add network.
Pilot conversion	<ul style="list-style-type: none"> • less disruptive to the business • problems in system can be ironed out before all users are on board.
Parallel operation	<ul style="list-style-type: none"> • if a problem arises with the new equipment then a task can be completed for a client on the old equipment.

Question 17

This question clearly allowed students who could apply their knowledge to a particular situation to perform well. A few students repeated the same area in part a and in part c despite being instructed not to. Part c was most commonly answered by using the option not selected in part a, which was expected. Many students, however, left part c blank or were unable to identify a requirement. Part d also separated students as most did not provide a strategy but just listed a response such as a survey without indicating to whom the survey would be given to or when it would be undertaken. A strategy should include how and when the evaluation will be undertaken.

a.

Data Security	Training
<ul style="list-style-type: none"> • customer access terminal must ensure access is only available to query the database and not to access and write to other sections of the program • staff logging on at the start of the day or during the day to the customer access terminal use the customer logon and not their own or customers will be able to do more than query the system • should create a customer logon separate from other logons which gives read-only access to defined areas of the software 	<ul style="list-style-type: none"> • staff will need to be trained in how to set up the terminal and restart it when required • staff will need to learn how to use the customer interface so that they can assist non-computer literate customers and ensure computer literate customers are not trying to enter inappropriate sections of the system • staff will need training in how to assist customers enter appropriate queries • staff will need training in problem resolution or trouble shooting to solve basic problems that could arise during the daily operation of the system

b.

- the service is not personalised as it removes human interaction
- the service is not faster if the customer is computer illiterate or cannot type or spell correctly
- the service is not fast if there is a queue to use the single terminal provided.

c.

Requirement	Explanation
Physical environment	<ul style="list-style-type: none">• the placement of the computer terminals must meet health and safety requirements• the quantity and location of power points is appropriate• the location of cables and network points is appropriate
Evaluation of trial	<ul style="list-style-type: none">• feasibility study of the system indicates that customers will continue to use this facility over time and find it useful in meeting their queries• the user interface is friendly and customers can use it quickly, accurately and with minimal assistance; positive feedback from trial
Training	<ul style="list-style-type: none">• staff would need training in problem solving/trouble shooting to ensure the customer terminal was operative at all times• staff would need to be able to teach customers how to use the system and how to query the database• staff would need to be trained to know when a customer was trying to get into inappropriate parts of the program and how the company wanted this handled
Security	<ul style="list-style-type: none">• how the equipment would be physically secured against theft, viruses and how the equipment would be monitored to prevent vandalism?• how the company would ensure that customers could only search the data and not change it• how the company would ensure that customers could not see inappropriate sections of the data stored on the system

d.

- survey sample of customers and staff twice during the first six months
- collect data on usage of terminals in all stores over first six months
- interview customers using the terminal three months after its installation
- maintain records of the down time of the terminals and the number of times the program has to be restarted during normal trading hours.

Question 18

This type of extended-response question was not on the 2000 paper and therefore was new to students. It proved to be a clear discriminator with the less successful responses identifying fewer risks and strategies than the more successful responses. Students who did well on this question were able to identify a risk, explain why there was a concern and then recommend a method that could be used to reduce the risk for the organisation. Most students looked at the risks identified below.

Risk	Description	Strategy
Inappropriate use	<p>Employees may use it for sending inappropriate messages.</p> <p>Employees may use it for personal rather than business purposes.</p> <p>Employees may go to inappropriate sites or download inappropriate material.</p> <p>Open to legal action for not protecting personal data.</p> <p>Not protecting personal data leaves company open to legal action.</p>	<p>Most companies have policies regarding the way in which the system is to be used and employees have to agree to this use before being given access to the Internet.</p> <p>Random checks, audit logs, blocking sites, message scanning of emails can be used to monitor messages and locations visited by users of the network.</p>
System attacks – Viruses	<p>Downloading of files or email messages can have viruses embedded and once opened the virus will infect the computer and the network.</p>	<p>Ensuring a virus-checking program is active on the network and updated on a frequent basis (at least weekly).</p> <p>Training staff in appropriate ways of handling files being transferred to the organisation and sending warnings of possible virus infections.</p>
System attacks – Hacking	<p>An unauthorised person is able to gain access to the system and would therefore be able to steal or corrupt data.</p>	<p>Establishing a procedure for accessing the network that requires unique logins and passwords to verify the user.</p>
System attacks – Theft by employees	<p>Access to the Internet allows employees to send confidential files over the Internet either to their home address or to a competitor or to an unauthorised user.</p>	<p>Audit logs and tracking of files can be used as a deterrent or means of identifying the user who transferred a file and legal proceedings can act as a deterrent.</p>
Computer sabotage (Hacking by denying access)	<p>Sending sufficient messages over the bandwidth available as to block the users ability to access the service and send or receive a message.</p>	<p>Data Recovery Plan to be put in place and used by the organisation</p>