



Section A

A number of candidates answered only 1 part of this question, e.g. part (a). As each part has two subsections, (i) & (ii), these candidates were disadvantaged in achieving their potential. Perhaps the standard question format may be ambiguous, and under exam conditions, leads to confusion regarding question requirements.

Question 1

- (a) This was the most popular question and generally well answered.
- (i) A number of candidates mentioned Active Server Pages as a means of gathering data, via forms, and transferring this to a database. Many suggested email as a way of exchanging data. A number mentioned the need for an online pay system, such as PayPal.
 - (ii) This part was well answered with most candidates mentioning encryption and passwords. Also mentioned was SSL, VPN and Data Compression.
- (b) This was the next popular question, along with Part (d)
- (i) Candidates included most of the items in the sample solutions, in particular: a printer for barcodes; internet access; and a system for handling credit card transactions.
 - (ii) Most candidates mentioned the need for a database and a barcode reader.
- (c) This was the least popular question with only 13% of candidates attempting it.
- (i) The need for a database from which to draw the merge data was suggested by most candidates, though few regarded the electoral role as such a source. At least one candidate suggested that the language of the letters could be customised by age groupings. e.g. ≤ 25 yrs and 55+ yrs.
 - (ii) This was not particularly well answered with most candidates opting for TV, radio, and face-to-face rather than SMS or blog technology.
- (d) Most candidates answered this question by posing a set of questions that would need to be satisfied e.g.:
- What fields should be included?
 - Who can access the data?

In general, the format of forms, queries etc. was not mentioned.

This question lead some candidates to discuss ethics and privacy, drawing them away from the requirements of criterion 2.

Question 2

- (a) This was attempted by only 24% of the candidates.
 - (i) Most candidates suggested analysing the company's data. A few suggested customer surveys or getting information on rival companies.
 - (ii) Spreadsheets were suggested by nearly all candidates.
 - (iii) Presentation Software (Powerpoint) was a popular choice as well as brochures and printouts.
- (b) This was by far the most popular choice of candidates (76%) and in general they had a good idea of how to create web sites and DVD content.
 - (i) Frontpage/Dreamweaver software, ISP, using a professional bureau for creating the product etc.
 - (ii) A few candidates differentiated between a presentation designed to be run interactively from a computer and one designed for a DVD player. DVD writing software and DVD burners were mentioned by most.
 - (iii) Most mentioned ease of update and low cost for the web site compared to a higher cost DVD solution. Some mentioned that not all people would have web access or a DVD player and perhaps a combination of both might be a good idea.

Sample Solutions:

Question 1

- (a) (i) Local managed server or bureau
ISP communications services or business domain, LAN and router
Either dedicated telecoms network or VPN over the internet.
Needs phone line and modem, or fibre and adapters. Distributed database software.
- (ii) Central database with password/level access by group
Email - encrypted with public/private keys
Secure connection

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- (b)
 - (i) client: EFTPOS connection - transmit/receive; barcode printer/labels; Internet access and a credit card. Site may require a registered username and password for additional authentication.
 - (ii) company: online database for storing client transactions with barcode references. Barcode reader.
 - (c)
 - (i) using electoral roll data for names/addresses merge with standard letter. Knowledge of local issues so that content can be customised.
 - (ii) as demonstrated in last State election, mp3 streamed message or blogg site; bulk email is also a possiblilty or even SMS messaging. Website with policies
 - (d) Basic questions of – What is its purpose? Who will it be used by? What information will be sought? What data already exists that can be included? What permissions need to be granted? Format of data entry form? Format of data records? Format of data forms, query forms and reports.

Question 2

- (a)
 - (i) querying of client transaction data will provide report on client usage and costs of services. Depending on company policy on ‘service provision’ v ‘shareholder returns’ adjustments can then be made to pricing structure.
 - (ii) Projections could be made using what-if function of spread sheets software or more sophisticated data modelling could be used though a calculator projecting trends might be sufficient.
 - (iii) Presentation software showing present and projected turnover could be used. Graphs and charts from spreadsheets. Videoconference if management distributed.
- (b)
 - (i) ISP or local domain with LAN and router. HTML page creating/editing software, graphic editing software, digital camera and/or scanner. AV editing software. Camcorder device.
 - (ii) DVD requirements would be very similar, especially where DVD uses web style navigation and file format. Extra software would be DVD codec and writing utilities as well as appropriate DVD writing hardware - video and audio capture/editing/recording system.
 - (iii) DVD is localised and contained, can be used on information kiosks. Not restricted by bandwidth, so richer presentations. Most people have a DVD player. Cannot be integrated with external sources such as central party site. Cannot be updated quickly. Delivery costs (post /hand deliver).

Website is live and therefore needs a connection for access, though mobile technology is gradually overcoming this. Can be linked to and from similar sites and quickly updated. Cheaper to distribute, fairly high penetration, simple web pages easy to make. Can be vulnerable to hacking, spoofing and pirating

Section B

Question 3

This question offered candidates plenty of choice, however, in a number of cases, this generosity was a source of confusion. Some candidates answered all four parts. Although suggested answer times were given, many candidates ignored these and wrote up to two page answers for one part and simply a paragraph on another.

- (a) This was by far the most popular question and tended to be answered well. Better candidates followed justification guidelines as outlined in the Standards document.
- (b) This was the least popular of the four questions and a common presumption, held by those who answered it, was that the RFID reader was within the truck itself and fed temperature information of the cargo to the driver. Very few candidates envisaged readers being placed along the route and sending temperature and motion information to either the consignee or JustMoveIT.
- (c) Although this was the second most popular question, it may be that candidates have not had first hand experience of Internet cafes. A common presumption was that the Electoral Commission would set up it's own hardware/software, within cafes, rather than use existing machines already connected to the internet. Very few candidates, therefore treated the question as discussing how the Electoral Commission could validate voter identity, offer security and integrity of data at its site, when accessed from an international node.
- (d) This was the second least popular question and gave rise to either very good or very poor answers. Some candidates were confused as to the nature of a Smart Card itself or what could possibly be held on it, to identify the user. Many mentioned the inordinate cost involved, not so much in producing the cards, but in distributing them and the likelihood of them being lost or misplaced due to the length of time between being used. Many discussed the potential loss of voter anonymity with regards actual votes cast and hence vote recording. A number of candidates attributed Smart Cards with inbuilt processing chips.

Question 4

Candidates chose strongly for part a over part b with a ratio of 9:1. This did not necessarily mean that the topic was well known but perhaps that the other was even less so. It is well to

note that though the second question traditionally allows the candidate to attain higher ratings, the three part questions tended to elicit shorter answers than for question 3. Whether this was due to time management skills or the structure of these questions is mostly conjecture, however subject teachers would do well to impress upon their candidates the importance of treating the latter question(s) in each section with greater depth.

- (a) Quite a popular reason given in favour of providing wireless computer access was for corporate image. Candidates argued that a company that was seen to be 'keeping up with the times' would gain a sophistication edge. Others were concerned that the computing device would be vulnerable to theft while the driver was out of the cabin. Interestingly, most candidates envisaged the computer access as being either a desktop or laptop. Very few suggested either a PDA with inbuilt phone or a phone with PDA capabilities.

One common solution offered was for the driver to synchronise his/her computer at each depot, via wireless connection, rather than attempting to receive new orders while in transit. Many candidates were concerned with health and safety issues where the driver's attention was distracted by looking at a screen. The more traditional means of communication were cited, especially CB and UHF radio. One candidate suggested the use of CV and UV radios.

- (b) As mentioned above, this question was not very popular and was chosen by only 20 candidates. However some of these offered classical answers that covered all the pros and cons of outsourcing compared with producing an in-house solution.

Sample Solutions:

Question 3

- (a) Technologically – practical using videoconference (camera /mike /TV) and usually ADSL Broadband connection. Can also share whiteboards and documents. Discussion boards are also quite easy to construct.

Operationally – not as effective as in person, but can save considerable time. Need to have a system of alerting users to new postings on bulletin boards (eg email alert)

Economically – videoconferencing has expensive solutions, and network usage costs, but simpler systems exist (MS Live communicator) over the internet at internet prices.

Bulletin boards have costs associated with accessing networks. Some benefits in having asynchronous discussions – not all participants available at one time; allows discussion summaries to be viewed before making decisions. Discussions can be held over a longer period without the pressure of the cost structures associated with video conference bookings.

- (b) RFID needs to pass near a reader to allow data to be transferred, so monitoring would be at selected locations during transport rather than continuous.

Technologically, the RFID device would need to be more complex than the simple ones that contain merely an identifier. To collect data, they would need to be powered.

Operationally, data transfer would be straightforward as the reader(s) could transfer data without human intervention.

Economically the devices could be relatively cheap and require minimal human interaction until interpretation of results is required.

- (c) Technologically the internet and the cafes are in place.

Operationally there would be questions about verifying identity. This could perhaps be done by providing overseas voters with an authentication (username /password). It does also leave the voting system more exposed to exploits.

Economically, there would be the cost of developing the system and handling the identification. The existing postal vote may cost very little extra and would provide additional security for the election data.

Would provide a faster final result.

- (d) smart cards. Relevant issues include: memory chip; reader/writer units; security; costs every 4 years. User reluctance. Lost cards.

Question 4

- (a) (i) Wireless computer technology exists. Strategically placed transmitters and a special modem allow access, usually to a fixed site, but could be mobile (with varying coverage).

Wireless computer access is not available widely across the country, so may only be available in certain larger cities. Services like unwired are growing but mainly only Sydney? So operationally limited.

Economically, the technology compares fairly well with fixed line technologies for fixed point bases however if mobile access needed cellular net technology would be very costly

- (ii) Satellite and mobile phone technologies allow wider coverage, but usually with higher usage costs and lower bandwidth.. CB radio systems a relatively low cost to purchase and operate, but are not very private

- (iii) Mobile phones with SMS would be cheapest for receiving information about orders. Devices like a 'blackberry' PDA/phone would allow updating of databases and interactive enquiries.
- (b) (i) Outsourcing means you have a fixed quote for cost. You don't have to hire workforce or development tools. The outsourced company has expertise and existing systems they have developed that may be tailored to your requirements. Cost may appear higher, but product may be developed more quickly and be more robust.
- (ii) requires access to development software, competent staff. Will gain a system to exact specifications and able to be modified in house. Will be costly in people and time resources.
- (iii) Outsourcing makes more sense unless you have an existing, competent staff with time on their hands.

Section C

Question 5

- (a) This question was attempted by about 28% of the candidates.

In general it was likely they had previously or co-studied Computer Science, and gave appropriate answers to what Applets are. Few, however, gave adequate reasons why Applets are used. Similarly, few offered examples of their use that were relevant to the transport or storage industry.

- (b) This question was attempted by about 39% of the candidates.

Many candidates knew of, or had used, an item of open source software, and were familiar with its nature. Many referred to Linux and/or Open Office, and a number wrote that open source software normally was 'buggy' or didn't work very well.

The alternatives to open source software were fairly well covered with at least two expected, with comments on how they compared.

Poorer candidates confused 'open source' with 'outsourced'.

- (c) This question was attempted by about 46% of the candidates.

Many candidates demonstrated a limited understanding of podcasting, eg. for audio only, or for iPods only. There were generally good explanations of the technology required to make podcasts work. These tended, however, to be from either the candidates' or the listener's point of view, rarely both.

- (d) This question was attempted by about 86% of the candidates.

Many candidates merely repeated the functions listed – the list needed to be expanded and discussed. Good answers gave details of the functions available – often more than expected in a 10-minute answer.

Many candidates were concerned about loss of the PDA but gave little discussion to its difficulty of use, eg. use of a stylus; small screen; relatively limited functionality. Stronger candidates compared a PDA with a laptop or notebook.

Many candidates stated that the wireless communication was via satellite.

Question 6

- (a) This question was attempted by about 57% of the candidates.

Almost all candidates who answered Question 5(a) on Applets, also attempted this question, showing that it appealed to the more technically minded.

Most explained the client-server relationship reasonably well, but demonstrated limited understanding of the range of functions of a server. A sensible diagram often helped to explain what many words didn't make very clear, especially in relation to the hierarchical nature of a network.

Few candidates could justify why/how the company could best use client server technology in the context of the company's operations, and very few compared it with a Peer to Peer network.

- (b) This question was attempted by about 39% of the candidates.

In general, this was poorly answered, with a superficial understanding of how to construct a relational database, demonstrated.

Many candidates were able to describe that fields were related, but unable to discuss how to construct tables and fields to create a relational database.

The advantages-of/reasons-for using a relational database were not referred to at all.

Sample Solutions:

Question 5

- (a) (i) Java is a programming language developed at Sun Microsystems in 1990, and later associated with web browsers. Applets are programs written in a subset of

the Java language. They are designed to run inside a web browser and to perform some tasks such as animated graphics and interactive tools. They are client programs only, with tightly controlled security features, eg. they can't (normally) access the hard disc drive. In order to use Java Applets you need to have associated files, which are compiled applet programs usually ending with a '.class' extension. One applet may need one or more.class files to make it work.

- (ii) Applets allow special effects and capabilities, such as clocks, calculators and animation, to be added to your website – they are well suited to animations, games and interactive tasks. JustMoveIT might use an applet to help customers calculate transport and/or storage costs online.

They are platform independent, and require a web browser plugin to work.

- (b) (i) Open source software refers to computer software available with its source code and under an open source licence. Such a licence permits anyone to study, change, and improve the software, and to distribute the unmodified or modified software. General Public Licence, GNU, is the most prominent example of open source licensing, but 'Creative Commons' is another. Unix and Linux are open source OS's, whereas Open Office and the Mozilla are well-known open source applications, comparable to Microsoft Office and Internet Explorer.

- (ii) Proprietary software is software that has restrictions on using, copying and modifying it, usually enforced by the developer. The prevention of use, copying, or modification can be achieved by legal or technical means (withholding the human-readable source code). Legal means can involve software licensing, copyright and patent law. Proprietary software licences can be sold as commercial software or be available as shareware.

Shareware is available for trial, with an expectation that if you like it, you will register for a nominal charge. Some shareware is time or function-limited, eg. no printing capabilities.

- (c) (i) Podcasting, coined in 2004, combines the two words *iPod* and *broadcasting*. Podcasting is one of a family of web feed formats, specified in XML and used for Web syndication. Although originally associated with audio (mainly MP3 radio) broadcasting, podcasting is also associated with video broadcasting – vidcasts. Web feeds also allow a website's frequent readers to track updates on the site using an aggregator.

Podcasts are not limited to iPods – any MP3 player, media player or web browser will play them.

- (ii) A website which is willing to host the podcasts, and a client program on user's machine to receive these, is required. Client often needs to 'subscribe' to the delivery site.

The candidate would need to convert an audio or multimedia recording to a suitable format, and then upload it to a podcast site. Podcast software applies an XML format suitable for RSS feeds.

The listener would be required to download it, and save it to his/her computer or portable media device – not necessarily an iPod.

- (d) (i) An example is the BlackBerry™, a wireless handheld device which supports push e-mail; mobile telephone; text messaging; web browsing and other wireless information services. It delivers information over the wireless data networks of cellular telephone companies. BlackBerry made headway in the marketplace by first concentrating on e-mail.

Other than the given capabilities, they often have handwriting recognition, speech recognition, a variety of built in application programs (not just games!) and can be synchronised with a computer, eg. by Bluetooth or USB cable. Many are controlled with a stylus on a touch-sensitive screen.

- (ii) Such a device would allow a political candidate to be in touch with his/her office and party via voice, text, email, voice mail and video. The candidate could operate and share his/her diary and receive up-to-date news feeds as they were broadcast. Such PDAs are, however, costly to use. On road operation time is limited and the unit needs regular recharging.

Loss or malfunction can be a significant issue for some people – possibly the candidate!

Most PDAs have a limited, inbuilt, storage capacity, which can be increased by addition of memory cards. In recent times, the LCD display has reached a significant size or clarity.

They are as subject to hacking attempts and viruses as any other computer.

Question 6

- (a) (i) Client server technology places a service on one machine (server), and machines needing this service have client software that interacts with this service. The server and client machines are in a hierarchical configuration rather than equal or peers. A web server and web browsing client, 'web browser', eg. Mozilla, are examples of client server technology.

Other common server applications are email, file storage, printing and user permissions/access management.

Server-side software has the management and provision roles in these applications.

- (ii) JustMoveIT could use client server technology to communicate and carry out its business with its various customers. Some examples could include: email exchange; web site delivery/access; database management/access; job logging/tracking; invoicing/payment.

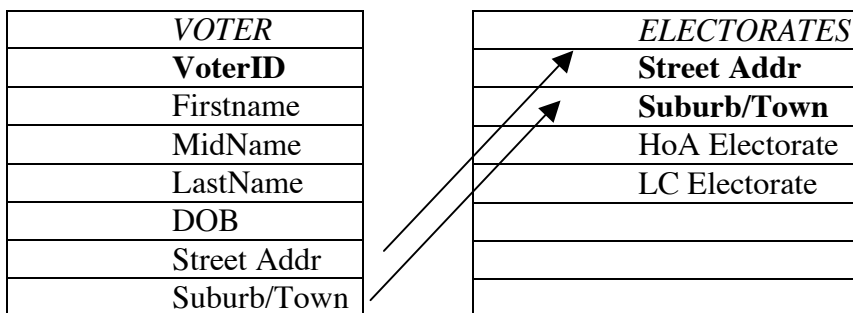
- (b) (i) A relational database is a database structured as a collection of tables linked by common field(s). Strictly speaking the term refers to a specific collection of data but it is invariably referred to with the software used to manage that collection of data. That software is more correctly called a relational database management system (RDBMS).

- (ii) Possible tables could include: personal details; electorate details; poll station history; voting details.

However, electoral legislation says that voters cannot be identified by their votes, so the Electoral Commission would not be able to store actual votes according to the voter.

A feasible way to organise a relational database would be to have one table identifying the voter with his/her residential address, and another identifying the voting electorate for that address (eg. House of Assembly and Legislative Council electorates are different).

A practical (minimal) design might be:



This would allow easy adjustment of allocations to electorates if, for example, electorate boundaries are changed (they are regularly reviewed). It emphasises that the electorate the voter is registered in is related only to their residential address.

- (iii) This in fact is (almost) exactly how it is done now! The Certified List of voters as used in a polling booth on polling day is a printout from the Electoral Commission’s database, and it contains this information.

The relational database allows various data to be selected from these tables ('queries' in MS Access), and the desired data fields included in on-screen displays ('forms') or on printouts ('reports').

The main features which support a **relational** database would be:

- information about only the voter is changed when necessary, eg. marries and changes surname, or moves house.
- information about an electorate is changed when necessary, ie. it is not necessary to find all the voters who live in Main Street, MyTown, and change their electorate individually - just change one record in the Electorates table.
- if a new street is opened up, only 1 record is needed in the Electorates table to identify its electorates, and all new residents are then related to that data by the linked fields.

Section D

The way the questions in this section were structured tended to steer candidates to answer these questions with a criterion 7 or 9 response rather than a criterion 8 response. Allowances in the assessment were made and candidates were not penalised for having 'strayed' into other criteria.. Ethical issues were raised in some questions and most candidates did not deal with the people issues in those questions, even though it is a clear criterion requirement. However, this might have been partly due to the wording of the questions in this section.

There tends to be considerable confusion between moral and ethical issues. Admittedly, these terms are used interchangeably in common English. However, from an educational point of view it might be necessary to make candidates aware of the difference between ethical and moral issues though this will require them to engage in a meta-cognitive learning process. Although not definitive, ethics is the discussion of different social, cultural and moral issues. As such there is not a right or wrong ethical response as there will be different ethical responses to issues depending on the stakeholders and on cultural, moral and social view points. Discussing ethics is the ability to be able to discuss these different positions. Moreover, moral and cultural views are normally very rigid and difficult to discuss as it inevitably lead to a right or wrong response. In contrast, ethics is not about right or wrong but an awareness of the complexities of all the issues. As an example, if the ethics of an Australian Card is to be discussed the issues are totally different for an individual as compared to a law enforcement agency or a government department. Questions in this section might have blurred the difference between moral and ethical issues and tended to illicit 'this is ethically wrong' or 'ethically right' type answers. Given that PY10 encourages the engagement in meta-cognitive engagement of the candidate, more attention and discussion time might have to be given in moderation meetings to these issues.

Although the instructions asked for writing half a page, dot point answers, as per moderation meetings instructions, were accepted and A levels could be reached using this method.

Question 7

All questions were more or less equally favoured by candidates with a slight preference for 7(a) and 7(c).

- (a) Most candidates discussed this question as a criterion 9 response, rather than criterion 8, giving legal arguments. Also, most candidates tended to combine parts (i) and (ii) into one answer.

Very few candidates considered people and ethical issues in this question. Those that did were very opinionated with statements like ‘ethically wrong’, ‘ethically right’ or ‘I believe’ and did not engage in a discussion of the issues. Very few candidates referred to the ten national privacy principles. Candidates tended to make broad, unsubstantiated statements such as ‘it is highly illegal ...’; ‘it is totally immoral ...’; or ‘it is unethical ...’.

- (b) There was considerable confusion over what de-identified data with the majority of candidates considering it mandatory to have a client's permission to publish de-identified data rather than discussing those issues surrounding the use of such data. Very few candidates discussed data issues before it was de-identified; e.g. at the helpdesk level. Again this question did illicit many legal responses (criterion 9) as an answer.
- (c) Most candidates attempting this question discussed the legality of SPAM (yet again criterion 9). However, all candidates (bar one) got it wrong by indicating that SPAM was illegal. SPAM is not illegal for government agencies, departments and voluntary organisations as they are all exempt from the SPAM act!
- (d) Again, most discussions revolved around copyright and intellectual property. Very few candidates discussed issues such as fake political sites (as happened with Al Gore in the USA elections). Similarly with ranking sites, most candidates treated this question as a legal issue.

Question 8

In general question 8(a) was slightly more favoured than 8(b). It almost sounds like a broken record, but far too many candidates treated these questions as criterion 9 type questions. As mentioned in the preamble, this was partly due to the wording of the questions. However, stronger candidates were able to answer these questions well within the scope of criterion 8.

Even though the allocated time for question 8 was less than for question 7, the majority of candidates spent far more time on question 8 than on 7. Allowances in the marking when overall awards were given for Section D.

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- (a) Very few candidates realised that cookies were the order of the day and it is up to the end-user to implement the appropriate protection. Many candidates stated that it was 'highly illegal and/or immoral or unethical'. Some candidates were unaware of how businesses operate providing answers such as: 'permission from the competitor has to be sought before collecting information on a competitor'.
- (b) Many candidates responded as if this were Section E (criterion 9) rather than a criterion 8 question. Very little understanding of the function of the Electoral Commission was evident as most candidates treated the Electoral Commission as a political party in their answers. It was difficult to make allowances in allocating ratings as a poor understanding of the Australian political system caused many outrageous claims such as 'highly illegal'; or 'immoral' to monitoring political advertising.

Sample Solutions:

Question 7

- (a) Issues that may have been discussed were: (this is by no means a definitive list):
- Access to data
 - Control by JustMoveIT over the company to which the data is outsourced.
 - Impact on the clients. Impact on the employees.
 - Ten National Privacy Principles
<http://www.privacy.gov.au/publications/npps01.html>
 - Security issues in relation to data verification and who can access and change data.
- (i) Need to be sure that the data will be protected from misuse, and that the laws of that country protect the people's privacy.
- (ii) Information privacy laws cover the protection of information on private individuals from intentional or unintentional disclosure or misuse. The European Union, (EU), has defined privacy principles which are generally more protective of individual privacy than those in the United States. Because of this, the transfer of personal information from the EU to the US is prohibited when equivalent privacy protection is not in place in the US. The basic principles of personal information privacy in the EU are:
- Data should be collected in accordance with the law.
 - Information collected by an individual cannot be disclosed to other organizations of individuals unless authorized by law or by consent of the individual.
 - Records kept on an individual should be accurate and up to date.
 - Data should be used only for the purposes for which it was collected, and it should be used only for a reasonable time period.

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- Individuals are entitled to receive a report on the information that is held about them.
 - Transmission of personal information to locations where ‘equivalent’ personal data protection cannot be assured is prohibited.
- (b) Issues that may have been discussed were: (this is by no means a definitive list):
- Privacy security at helpdesk
 - What happens before the data is de-identified
 - How secure is the de-identification process
 - Access issues
 - Clients' issues
 - National Privacy Principles
 - Data security in particularly before de-identification.
- (i) As long as the data is collected for the purpose of improving the service to clients, this should be ok,
- (ii) It is not ethical to disclose data without the client’s permission, but in this case, the data is de-identified, so should be ok.
- (c) Issues that may have been discussed were: (this is by no means a definitive list):
- National Privacy Principles
 - Clients' consent
 - Political behaviour using the internet
 - Authentication of political material
 - Use of opponent’s materials in a political setting
 - Difference of data and interpreted information from that data.
- (i) If the owners of the email addresses have given their ok to receive the emails, then it is ok. If not, then it is not ethical and probably illegal under the spam act.
- (ii) Australia favours the ‘OptOut’ approach to use of email addresses. In this case the party has collected a list of ‘potential’ supporters. Ethically, it should inform these people, in the first communication, of the means for unsubscribing to the list. Furthermore it should not pass on this list without informing the people involved.
- (d) Issues that may have been discussed were: (this is by no means a definitive list):
- Impersonation using web sites
 - Reliance on Google
 - Data and Information and people’s responses
 - Authenticity and issues on verification

- (i) The owners of the website must have permission to use the photographs of the candidates.
- (ii) Link farming is the process of exchanging reciprocal links with Web sites in order to increase search engine optimization. The idea behind link farming is to increase the number of sites that link to yours because search engines such as Google rank sites according to, among other things, the quality and quantity of sites that link to yours. In theory, the more sites that link to yours, the higher your ranking in the search engine results will be because the more links indicate a higher level of popularity among users of the Internet. However, search engines such as Google consider link farming as a form of spam and have been implementing procedures to banish sites that participate in link farming, so the term link farming has garnered negative connotations across the Internet.

Question 8

- (a) Issues that may have been discussed were: (this is by no means a definitive list):
 - National Privacy Principal
 - Advantage and disadvantages to the client (for example Amazon web site and tracking)
 - Discuss issues from the company's point of view
 - Discuss issues from the regulator point of view (governments)
 - Discuss issues from the client point of view.
 - Storage and collection of information on competitors can be done by hacking or otherwise and the consequences
 - Issues of client tracking can be beneficial (filling out forms, recent purchase) and contrast that against accepted commercial practices.
 - Service expectations of clients from the Company
 - Commercial considerations for the Company to optimise profits as part of its normal operations.
- (i) Collection of data without the client being aware of the purposes to which that data is going to be put. Tracking and profiling may lead to incorrect interpretation and inconvenience for the client.
- (ii) It's ok as long as it is used to improve services to the client. This includes improving internal business operation to reduce costs which can then be passed on to the client. It's not ethical if the data is onsold to others. Most collectors offer an opt in /out option for collecting such data.
- (iii) It is normal business practice and is used in stimulating competition.

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- (b) Issues that may have been discussed were: (this is by no means a definitive list):
- National Privacy Principal
 - Contrasting and comparing issues on political advertising in other media and the internet
 - Issues of freedom of political speech on the internet and in other media in an Australian democracy
 - Charter of the Electoral Commission is the same for the internet as for all the other media and situations
 - Expectation of voters in an election
 - Expectation of candidates in an election
 - Use and dissemination of false information
- (i) The electoral commission has a responsibility to ensure that the law is upheld during the election and so should do it.
- (ii) The electoral commission should only assess material for 'illegal' content – obvious lies, defamation etc, not the content in detail.
- (iii) Much damage can be done by one candidate circulating incorrect data about another. This can influence the result, which cannot be reversed after the election is completed.

Section E

Question 9

No part of this question was more popular among candidates. Less able candidates commented on the question statement rather than the questions themselves, often indicated as (i) & (ii).

- (a) (i) Most candidates indicated that they understood the legal aspects of illegal access to data files belonging to others. The better candidates referred to Privacy laws and the need for different levels of access.
- (ii) Answers ranged from identity theft to stalking. A significant number of candidates gave confused answers.
- (b) Most candidates were conversant with how domain names work, but demonstrated little knowledge of a centralised authority that manages them. In general, legal and economic issues were handled well, but the social issues were hardly addressed.
- (c) Candidates who answered this part appeared to have had experience with online forums. This part, therefore, tended to be answered well.

- (d) This part was generally answered well with the words ‘equality’ and ‘ease of access’ appearing regularly. Social factors were less well treated. It would seem that most candidates do not have a clear understanding of what is meant by ‘social factors’ within a given context.

Question 10

Candidates chose part b of this question by a factor of 2 to 1. ‘A’- assessed candidates stood out clearly in their handling of this section. Again, the social requirements of this question tended to be overlooked.

- (a) (i) Candidates tended to answer this question very generally, with very little reference to either Cyber laws or the use of telecommunications to commit a crime.
- (ii) Better candidates discussed cost benefit analysis and risk factors, whereas the majority restated what they had offered for part (i).
- (b) (i) The majority of candidates simply stated that viruses are ‘bad’, with very little reference made to any laws. A few drew parallels with vandalism and the effects it would have on an online voting system.
- (ii) Most answers made reference to loss of business and downtime of an online business and the effect it would have on an online voting system.
- (iii) This part was answered well by the better candidates, but poorly by the others. ‘A’- candidates made a balanced case, ‘for and against’, across the three areas. This question separated the candidates quite clearly. Weaker candidates tended to make general comments without reference to any of the three aspects.

In General

- Several scripts were barely legible due to poor handwriting. These may have contained gems but were very difficult to decipher.
- Good papers were of a very high standard.
- A significant number of candidates, submitted a blank script, or one with so little content, that made it difficult to rate above a ‘D’ assessment.
- There was no apparent trend to following a theme. Candidates tended to choose questions according to the knowledge they had on the topic.
- It has been suggested that as State or Federal voting were not within the candidates' realm of experience. Those candidates who had participated in online forums tended to use this context for their answers on voter forums.

Sample Solutions:**Question 9**

- (a) (i) datafiles are set up for a particular purpose and the data so collected should be used only in accordance with the original intent. Access to that data should be limited to those authorised to extract that information as part of their employment. Editing of client data should only be carried out to ensure data is correct and up to date and such alterations should be able to be audited. Spurious alteration of data is not allowed and everyone has the right to inspect data held on themselves to ensure that such data is correct.
- (ii) in the case of unauthorised access: privacy concerns of a personal and/or business nature; in the case of unauthorised alteration of data again the repercussions can be either of a personal and/or business nature. Where there is malicious intent the legal situation would be similar to laws covering libel, calumny and slander.
- (b) Domain names must be registered with the relevant national body. Where international trade is required, global registration can be sought. Names can be traded by the owner, like any other commodity, and registration details updated. Speculative registering of domain names has been stopped as only operational 'companies' may register. Generic domain names capitalise on high traffic through incidental hits.
- (c) (i) Voter forums, although often accessed only by subscription, can render participants relatively anonymous. Furthermore, the material put forward on such forums can be presented without the need for verification of copyright or factual validity. Although laws of copyright pertain to original material published via the InterNet, it is more difficult to track such breeches than with traditionally published material.
- (ii) With face to face meetings, speakers can be subjected to a more intense audience scrutiny than those in an online forum. They are often faced with questions without notice and do not have the luxury of answering at their leisure when further facts have been gleaned. With online forums, heckling is at a 'distance' and less confrontational than in a face to face meeting
- (d) (i) Policies aimed at allowing all citizens equal opportunity to access and participate in buildings, activities and events, lay down the guidelines for an inclusive society. Towards this end, most government agencies have strict guidelines for web page design and online access to their services.
- (ii) As with OHS the main guideline for inclusivity is 'within reason'. No company or government agency would be expected to go to inordinate lengths, however an agency that required all citizens to participate in an activity, such as voting, would be required to do more in this regard than say the motor licencing body.

Question 10

- (a) (i) Deliberate causing of disruption to an e-business is mainly covered by the same laws that protect a company from unauthorised access, breaking and entering as well as causing wilful damage.
- (ii) Increased security measures can be evaluated against low, middle or high incidence of disruption, due to cyber attacks. In this way, security measures can be evaluated in the light of risk analysis reports. What are the risks and what funds are we prepared to allocate to counter these in light of what we could lose?
- (b) (i) Deliberate and malicious creating and delivering of computer viruses is looked upon by the law in a similar way to vandalism. Sentencing usually takes into account the monetary loss due to both loss of data and down time to rebuild the system.
- (ii) Cyber attacks, like breaking and entry, are costly to the community at large. All companies must factor in the cost of preventative software/hardware solutions including the running of up to date monitoring software, backup schedules and disaster recovery hardware, software and procedures. Each of these adds to the running/production costs which in turn are passed on to the customer/consumer.
- (iii) Internet Voting might allow easier participation where home access to the Internet is close to full market penetration. As demonstrated by attempts at online voting in the US, ensuring clear instructions to voters to avoid invalid votes is a significant issue. Depending on one's dwelling place today, reliable or even affordable access to the Internet cannot be guaranteed. On the other hand, problems associated with voter identification, multiple voting and coercion, would be difficult to address. With the above in mind, it would be difficult for even a first world country such as Australia to employ Internet Voting.

All correspondence should be addressed to:

Tasmanian Qualifications Authority
PO Box 147, Sandy Bay 7006
Ph: (03) 6233 6364 Fax: (03) 6224 0175
Email: reception@tqa.tas.gov.au
Internet: <http://www.tqa.tas.gov.au>