

THE BCS PROFESSIONAL EXAMINATION

Professional Graduate Diploma

April 2004

EXAMINERS' REPORT

MANAGEMENT INFORMATION SYSTEMS

General comments on candidates' performance

Around 70% of the candidates were well prepared for the examination and provided answers of a pass standard. A minority attempted to answer by merely restating points made in the questions or by looking at the subject matter of other questions and including these in their answers. Candidates should be advised that they will not gain any marks for such efforts.

At this level, examiners are looking for clear and logical presentation of the required answer points, accompanied by diagrams where relevant. Although most answers given generally covered the required points, higher marks could have been obtained if the candidates had spent more time clarifying their thoughts before answering the question. Also, candidates should ensure that they understand exactly what is required by the question. Answering only a part of the question or forgetting to properly apply theory to a given scenario will reduce the possible marks that can be obtained. So, if the question says "describe with supporting examples", then make sure you do provide supporting examples within your description. If the question says "apply to MIS" then make sure you apply your answer to the MIS domain, and so on.

A large minority of candidates answered more than the required three questions. Because of time constraints, this meant that there were often four or five poor answers rather than three good answers. As credit will only be given for the three best answers, future candidates are advised to attempt only three questions and to concentrate their thoughts accordingly.

An indication is given below of the expected answer points. However, marks were given for additional points if relevant to the question.

Question 1

In the context of MIS developments, briefly describe:

- | | | |
|----|-----------------------------------------------|------------------|
| a) | <i>Application Service Providers</i> | <i>(5 marks)</i> |
| b) | <i>Data modelling</i> | <i>(5 marks)</i> |
| c) | <i>Data mining</i> | <i>(5 marks)</i> |
| d) | <i>Change management</i> | <i>(5 marks)</i> |
| e) | <i>The Software Capability Maturity Model</i> | <i>(5 marks)</i> |

Question 1 Answer pointers

(Syllabus references 2, 3 and 4)

Part a)

- These are companies that rent out software applications over the internet. Companies using ASP services use applications hosted by the ASP with appropriate communication links back to the client company. Subscribing to an ASP allows companies to avoid purchasing, installing, supporting and upgrading expensive software applications.
- ASPs offer a wide range of applications, from simple web applications to full corporate systems. The ASP is responsible for application maintenance, communication with the software vendor and licensing.
- As per outsourcing, there is usually a Service Level Agreement and charges are levied on a usage basis.
- The target market for ASPs is small companies or companies wishing to trial applications.
- The upside of ASPs is that capital investment is low. The downside is that any significant volume of transactions could result in high charges and there may be a high minimum charge.

Part b)

Data modelling to design/understand databases

- At a conceptual level there is the three-level database model based on the work by ANSI/SPARC. This has level one as the external conceptual view of organisational data. This level is not concerned with how the data is physically stored or what other MIS use the data. Level 2 is the logical or enterprise data level where the relationships are represented by one or more DBMS. Level 3 is the physical or storage level.
- To define data relationships there are four alternate modelling methods: hierarchical, network, relational and object.
- Hierarchical model. In this, each element is subordinate to another, similar to a military or traditional organisational hierarchy. A parent/child concept is used to represent the relationships.
- Network model. A drawback with the hierarchical model is that a child can only have one parent and this does not reflect the real world where finished goods will frequently use common parts and sub-assemblies, for example. By using pointers or addresses to other data items, the network model overcame this difficulty and led to the CODASYL standard.
- Relational model. Use of pointers or addresses in the network model made subsequent changes difficult. The relational model used the DBMS to find related items based upon the values of specified data fields. Therefore, by changing or adding to the data fields, the relationships could be changed. Relational databases eased the task of data design by exploiting the growing capacity of computers.
- Object model. This expands the view of data by adding methods/procedures and attributes to the data in addition to the data itself and its relationships. Objects can include other types of "data" such as programs, music, voice, video and knowledge data.

Data modelling to understand data within an organisation

- To understand data flows within an organisation, IS and user staff can use a range of techniques including Data Flow diagrams, process modelling and entity relationship modelling.
- Data flow diagrams are easy to understand and are often prepared by user staff. They show the passage of data through an organisation, where it is stored, its ultimate destination and its relationship with other data flows and systems.
- Process modelling is a functional decomposition that is used to break down complex problems in a detailed way.
- Entity models are based around an identifier upon which information is based. This could be a mortgage account number, an assembly of components, an individual component or an address. The relationships between different entities is used when designing certain types of database.

Part c)

- Usually, data mining requires the presence of a data warehouse. This can be obtained from transactions gleaned from transaction systems. Transaction data differs from standing data, as transaction data is not usually stored. For example, the transaction data could consist of all customer purchasing transactions - data that could be useful if trying to understand buying behaviour. Retention of transaction data has become feasible due to the decreasing cost of off-line storage.
- Data mining can consist of entering queries in order to obtain specific answers. The systems can also be used to look for unknown correlations or clusters of data that can provide an organisation with new insights.
- Frequently used in supermarket applications, where buying behaviour can be used to target specific customers with special offers in order to entice them into the store. Also of some use in medical applications to analyse the effect of different treatments on a range of similar patients over time.

Part d)

Purpose of Change management

- To allow change to occur in a controlled manner
- To ensure that all potential impacts are considered and managed in line with the project objectives

- To manage the project contingency
- To control scope creep
- If we do not manage change, we lose control of both costs and schedule

Managing change

- Log every change request
- Consider the effort and cost required to effect the change
- Consider the impact
- Agree all changes with sponsor
- Accept that change is essential but it needs to be controlled

Part e)

The Capability Maturity Model for Software is a model for judging the maturity of the software processes of an organisation and for identifying the practices required to increase the maturity of these processes.

The Capability Maturity Model for Software describes the principles and practices underlying software process maturity and is intended to help software organisations improve the maturity of their software processes in terms of an evolutionary path from ad hoc, chaotic processes to mature, disciplined software processes.

It is important as it is an objective assessment of an organisation's software capability, with a proven approach to improvements.

Levels

- 1. Initial.** The software process is characterised as ad hoc, and occasionally even chaotic. Few processes are defined and success depends on individual effort and heroics.
- 2. Repeatable.** Basic project management processes are established to track cost, schedule and functionality. The necessary process discipline is in place to repeat earlier successes on projects with similar applications.
- 3. Defined.** The software process for both management and engineering activities is documented, standardised, and integrated into a standard software process for the organisation. All projects use an approved, tailored version of the organisation's standard software process for developing and maintaining software.
- 4. Managed.** Detailed measures of the software process and product quality are collected. Both the software process and products are quantitatively understood and controlled.
- 5. Optimising.** Continuous process improvement is enabled by quantitative feedback from the process and from piloting innovative ideas and technologies.

TOTAL Q1 5 x 5 = 25 marks

Question 1 Examiner's comments

This was not the most popular question and many candidates left it until the end, frequently omitting one or more of the five subject questions.

a) Application Service Providers. Most gained two or three marks for describing ASPs but few managed to achieve the higher marks available in the last three marking points. Some candidates confused ASPs with ISPs and gained no marks.

b) Data Modelling. Although many clearly understood data modelling, they failed to describe it adequately and did not provide any examples or indicate the advantages such techniques bring to MIS. Candidates failed to describe the differences between data modelling required to design databases and data modelling required to understand data within an organisation. In general the answers were surprisingly disappointing.

c) Data Mining. Many comprehensive answers were provided which gained high marks. Candidates often provided relevant examples and used suitable diagrams to illustrate their points. Most candidates answered this part of the question adequately.

d) Change Management. Again, considering the importance of this to MIS, there were some very poor answers. Some candidates answered in the context of changing the management of an organisation, rather than the procedures necessary to change an MIS as a result of a business change.

e) The Software Capability Maturity Model. Candidates who knew and understood the SCMM generally gained high marks. Many clearly had little idea and wrote several paragraphs around the words "software", "capability", "maturity" and "model", gaining no marks. Some candidates did not attempt this part of Question 1.

Question 2

You are a consultant who has been contracted to advise a commercial organisation on the development of an IS strategy. Prepare an initial report for the Board to:

- a) Explain the differences between operational, tactical and strategic planning (6 marks)*
- b) Describe the fundamental issues that are central to IS strategy planning (10 marks)*
- c) Describe how the competitive forces model could be used to assist IS strategy planning (9 marks)*

Question 2 Answer pointers

(Syllabus reference 1)

Part a)

Although the thrust of the question is about strategic planning, the first part of the question requires the candidate to describe the different types of planning activities:

- Operational planning. This is concerned with the day-to-day activities involved in managing projects, meeting time and financial targets and reporting progress. It would involve internal IS staff, IS staff from supporting organisations and business line managers. The time horizon would typically be 6 to 12 months.
- Tactical planning. This is concerned with the selection of projects and the allocation of available blocks of resources. It would involve business middle managers, IS management and the management staff from supporting organisations. The time horizon would be 1-2 years.
- Strategic management. This is concerned with the alignment of business goals with IS systems, determining an overall strategic framework for IS and taking a vision of the future. This type of planning would involve the Board of an organisation and the head/director of IS.

Part b)

An understanding is sought of the various issues that face IS strategy planners. Argued points are required which are likely to include:

- Need to align business goals with IS goals. An obvious requirement that can be missed if IS management are omitted from the business planning process or have no real understanding of the business. It is an argument for the head of IS to be on the Board or to have a permanent position on the business planning committees of organisations.
- Changing technologies. Changing technologies implies that planning processes should be sufficiently flexible to meet these changes and that IS and other managers need to keep abreast of technology developments and understand the development life cycles involved.
- Need to consider programmes, not single projects. Particularly for IS projects, it is not always appropriate to evaluate single projects in isolation, as these may just be enabling projects for other endeavours. How these projects can enable other projects is an important consideration.
- Infrastructures are difficult to justify. Related to the above, infrastructure projects are notoriously difficult to justify. For example, an organisation wishing to introduce modern systems would first have to make a large investment to install a new network, buy servers, buy ERP software, etc. before any benefits are realised at all. These new facilities would have to run alongside the old until the system is built, tested and implemented, further adding to the cost.
- Responsibility is beyond the IS department. New IS systems are not just the responsibility of the IS staff. Successful IS involve a collaboration between business staff and IS staff.

Part c)

Candidates are expected to draw the diagram representing Porter's Competitive Forces model.

An explanation of how the five forces could influence strategic planning is required:

- Threat of new entrants
- Bargaining power of customers
- Bargaining power of suppliers
- Substitute products or services
- Rivalry among competitors

How the CF model could affect MIS strategic planning:

- The model emphasises the need for IS planning to be intrinsic with business planning and use of the model will assist with this process.
- The model will provide an insight into the future. This may include radical changes in direction for an organisation that would impact on the provision and organisation of the MIS facility. Infrastructure, capacities, software selection, staffing, resource allocation and project planning would be affected.
- Many of the changes highlighted by the model may only be enabled by technology or rely on technology for implementation.
- Early notice of business changes or possible changes will enable the MIS planners to allow for appropriate flexibility in current and future projects.

TOTAL Q2 6 + 10 + 9 = 25 Marks

Question 2 Examiner's comments

A popular question which was attempted by most candidates.

Part a) of the question was straightforward with most candidates gaining full marks.

Few marks were awarded for Part b). Candidates either repeated the points made in Part a) or missed the point of the question. A worryingly high number of candidates failed to mention the need to align IT strategy with business goals or to involve users in the design process. Some candidates described the SISP approach and consequently gained marks for this alternative answer.

Part c) attracted more marks than Part b). Candidates were clearly familiar with the competitive forces model and some textbook answers were provided, complete with diagrams. Although many understood the model, few were able to articulate the links to IS strategic planning and lost marks as a result.

Question 3

1. Describe, with illustrative examples, the MIS you would provide to support each of the following business situations:

- a) Where two groups of managers, each group being in a different geographic location, wish to make a joint decision regarding a particular aspect of company operations without having to travel. (8 marks)*
- b) Where non-IT staff wish to have flexible and easy access to data from several aspects of company operations. (8 marks)*
- c) Where specialist staff, on behalf of a manager, want to run a simulation model on a regular basis, with the opportunity to perform "what-if" analysis. (9 marks)*

Question 3 Answer pointers

This question covers MIS types and their applicability to different business situations. The closest area of syllabus to this is in Section 2 (MIS support capabilities) and matching those to requirements of the situations in hand.

Part (a) is asking about group decision support, for example the use of room-based videoconferencing. Candidates may discuss how the rooms would be designed and how the whole process of decision making may take place. Part (b) is about EIS or even OLAP with Data Warehousing as its basis. Candidates may describe EIS and/or Data warehouses with OLAP, and how they may work to provide easy and quick access (via very user-friendly interfaces, use of drill down, use of multi-dimensional data, etc.) to staff in various departments within the organisation. Part (c) is about traditional DSS type systems, and how they can be used to provide a large modelling capability with little associated data, and how the user (who is normally an intermediary between the computer and the decision maker) can use this to test out scenarios and examine their effects. Students may discuss what a simulation model is, and provide an example of one (e.g., for inventory management or for supermarket queue management). Students may also provide a DSS diagram and show where the simulation model would be housed.

(The marking scheme has to reflect the broad nature of the question, so for each part, a mark is awarded for each relevant point, be it suggesting an MIS approach or describing in detail an aspect of an approach, up to the maximum mark total stated against the sub-question.)

TOTAL Q3 = 8 + 8 + 9 = 25 Marks

Question 3 Examiner's comments

A substantial number of candidates attempted this question, and some managed to gain excellent marks. Others either did not really understand the requirements of the questions or did not provide sufficient description or supportive examples.

Part (a) was well answered by those candidates that provided one MIS solution that supported the group-to-group decision making process alluded to in the question. Of those that did not fair as well in this question, a number of candidates provided several possible solutions, that included desktop videoconferencing, room-based videoconferencing, e-mail, chatting, and newsgroups/bulletin boards, but made no attempt to suggest a preferred solution (which is what the question was after). Other candidates answered the question at the hardware (client-server) level rather than the application level, whereas some candidates provided an inappropriate solution (e.g., a solution that is appropriate for 1-to-1 communications rather than group-to-group). There were also several candidates who just did not write enough on the solution that they presented.

Part (b) again was well answered by those that took on board the key requirements in the question – *flexible* and *easy data access* to *several aspects of company operations*. Most of the good answers suggested OLAP/Data Warehousing or EIS/ESS (possibly in conjunction with data warehousing) solutions. ERP systems were also described by some, which were appropriate answers depending on the description and justification given.

Part (c) was the part that was the least well attempted by candidates. Many did not pick up on the substantial modelling requirements of the question. Instead they either described an MIS solution that was wholly inappropriate (e.g., data mining or EIS) or something that was totally irrelevant to the question (e.g., the prototyping development technique). Some candidates suggested an Expert System solution, and again this was appropriate depending on the description and justification given for the solution.

Question 4

(a) End-User Computing (EUC) is concerned with the direct use, and possible development, of a computer-based system by a non-computing professional. Discuss, with supporting examples, the advantages and disadvantages of EUC with respect to MIS development and use.
(14 marks)

(b) Describe what should be included in an MIS feasibility study report. (11 marks)

Question 4 Answer pointers

Question 4 covers Section 3 - EUC in an MIS context and MIS feasibility.

Part (a) requires candidates to discuss the advantages and disadvantages of EUC in an MIS context. Most of the advantages/disadvantages of EUC in an MIS context are true of EUC in any context (although they may have varying significance).

Advantages of EUC include:

- Better understanding of the problem and the user requirements, as the direct user develops the support system him/herself.
- No communication needed with an intermediary developer, which can lead to misunderstandings and errors in the development of the support system.
- An intermediary user, if adopted, has to understand what needs to be investigated, and has to communicate the findings from using the support system. These processes can take time, and can lead to errors in misunderstanding of report requirements and/or results. This is not an issue when the decision maker is the direct end-user of the support system.
- The time to delivery of the MIS is usually faster, and the cost is lower.

Disadvantages of EUC include:

- Decision makers may be reluctant to use the system directly as typing and time to learn the system are not part of "their remit" or "agenda".
- The decision maker is not an expert in computing, and therefore may implement the MIS wrongly. This could mean that the MIS gives wrong support/recommendations without the decision maker knowing.
- Other aspects of the development may be poor, such as security features, poor interface and poor (or no) documentation, making it difficult to understand, use and maintain over time (particularly if another person maintains it).

(Marks: for each point relevant to advantages - 5 marks. For each point relevant to disadvantages - 5 marks. Examples - 4 marks. Total Part(a) = 14 Marks)

Part (b) tests the candidate's knowledge of feasibility reports, with particular emphasis on MIS feasibility. The general aspects covered in a feasibility study report should be briefly described, namely:

- Terms of Reference for the study
- Existing System Overview
- Problems with the existing system
- Proposed System, covering its feasibility from technical, social and economic perspectives.
- Development plan
- Alternatives considered, with their feasibility issues highlighted (and hence, the reasons why they were discounted in favour of the proposed system).

Candidates may mention certain techniques and/or associated tools that may be of use when working on certain aspects of this report e.g., the use of diagrammatic techniques to describe the current system, and the use of NPV and break-even analysis for identifying the economic feasibility of candidate systems.

Candidates are expected to consider their answer from an MIS perspective at all times, so one would expect to find MIS-specific issues within some of the sections, such as:

- The fact that the benefits and costs of some MIS cannot be judged with any degree of certainty at the outset and may only become apparent after the development of the actual MIS has commenced. This makes traditional economic feasibility assessments, in particular, very difficult. Many successful MIS projects would have been scrapped had the economic situation been the deciding factor in their development. Indeed, a lot of successful MIS were originally under the corporate R&D umbrella, thereby by-passing the initial feasibility stage.
- Social issues with respect to MIS, such as the existence of top management support (vital for MIS developments), and the availability of "champions" to be advocates for the new MIS. Issues such as the way in which social interaction will change may come into the feasibility study report with respect to MIS such as Videoconferencing and E-Mail. These issues may be more prevalent in this context than in other IS contexts.

(Marks: for a general appreciation of feasibility report structure and contents - 6 marks. For highlighting MIS-specific issues - 5 marks. Total Part (b) = 11 marks)

TOTAL Q4 = 14 + 11 = 25 Marks

Question 4 Examiner's comments

This was a very popular question, and many candidates managed to obtain pass or better than pass marks. Part (a) was generally well attempted by candidates, as they knew about EUC as a concept and were able to present and justify both advantages and disadvantages of EUC in a coherent and structured manner. Some candidates, however, thought EUC was a computer system rather than a concept. Others presented advantages and disadvantages, but failed to justify why they were being presented (for example, just saying that cost is lower without some explanation as to why it is, is insufficient for full marks). A number of candidates were a bit “black and white” in their answers, saying it will do this or it won’t do that: in many cases, the situation is less clear cut, and “may” or “may not” were more appropriate words to use.

Part (b) was reasonably done by many that clearly understood the nature of an **IS** feasibility study. However, very few candidates were able to put the feasibility study within the MIS context effectively, by discussing MIS issues in the context of social, economic and technical feasibility. As such, very few gained excellent marks in this part.

Question 5

A company needs to hire a new MIS Manager, and the job specification for this post highlights the following as essential knowledge for any suitable candidate to possess.

(a) Knowledge of how the Internet can be used to support management. (8 marks)

(b) Knowledge of Teleworking, and its advantages/disadvantages. (9 marks)

(c) Knowledge of IT Outsourcing and when it is appropriate for MIS. (8 marks)

You are considering applying for this post. Write a report, which discusses each of the areas listed above, to convince the company that you possess the required knowledge.

Question 5 Answer pointers

Question 3 covers several aspects of the syllabus, including managing MIS projects – Outsourcing - (Section 1), and Internet and Teleworking (Section 4)

Part(a) concerns the application of the Internet to management support. The answer should be suitably MIS-focused, and may include points such as the following:

- E-mail and videoconferencing, available over the Internet, are MIS tools in their own right. Candidates may talk about examples of these technologies being applied to management decision making or to the collation/dissemination of information/management reports.
- The use of the Internet as a source of management information, both hard and soft in nature. Access to external data banks via the Internet. The use of browsers and search engines to access management information regarding a topic.
- Corporate Intranet could provide the interface to different in-house applications packages for use by corporate personnel in distant locations and/or after office hours. Candidates may explain the types of information/applications packages that may be available over a corporate Intranet, and/or provide examples of these in practice, e.g., EIS.
- The issue of security is clearly paramount, as some of the Intranet services may be integral to the company's corporate strategy. You don't want your competitors seeing corporate management information on your Intranet!

(Marks: for each relevant point in the discussion of Internet and management support 1 mark, to a maximum of 8 marks)

Part (b) concerns teleworking (i.e., working from a remote location, usually home) and its advantages/disadvantages. The answer should be suitably MIS-focused, and may include points such as the following:

Advantages from employer's perspective:

- Reduced estate costs (such as rent, expansion, relocation)
- Increased employee productivity (studies have shown between 10-26% improvement)
- Reduced absenteeism
- Increased employee morale
- Reduced turnover and retention costs
- Greater potential employee market

Advantages from employees' perspective:

- Increased quality of life (better work/life balance, improved family relationships)
- Reduced stress levels
- Increased flexibility
- Reduced personal costs (such as commuting expenses)
- Increased job satisfaction in some situations

Disadvantages from employer's perspective:

- Productivity - even with the advances in tracking employees' work, employers may be still uncertain about the actual progress employees are making. The only way they can really keep a close eye on employees is when they are in the office, which is not an option for teleworkers.

Disadvantages from employee's perspective:

- Seemingly "out of it" and therefore not being given due regard in work-related issues such as promotions.
- Lack of social interactions at work, due to remote working.
- Being distracted from work by personal-related matters.
- Having to be very organised and single-minded.

Candidates may indicate that the telecottage concept was proposed as a way of alleviating some of the disadvantages associated with teleworking. Candidates may also discuss the impact (advantages and disadvantages) of mass teleworking on the local and/or larger community.

(Marks: for each relevant point regarding teleworking and its advantages/disadvantages 1 mark to a maximum of 9 marks)

Part (c) is concerned with IT outsourcing and when it is appropriate for MIS. An overview is expected of what IT outsourcing is about and the different types of IT outsourcing that can occur:

- IT outsourcing is the purchase of IS/IT services needed to perform business functions from a source that is considered to be external to the organisation.
- Different types of outsourcing include total (where the entire IS/IT provision is catered for by a third party) or selective (where only some aspect of the provision is catered for by a third party, for example just the computer hardware is available from a third party, or where a particular applications program's development is contracted out, or where a contractor looks after the maintenance and operation of a particular applications system, or where the entire IS/IT support for a specific business process is provided by a third party).

Candidates may discuss the advantages and disadvantages of outsourcing as part of their overview, possibly including the following points:

- Benefits of outside expertise in the particular IT area outsourced. However, loss of business understanding between IT people and organisation, if the outsource provider does not possess any of the original in-house IT people.
- Less staff in the organisation and their associated financial and social implications (e.g., pensions, benefits, motivation issues, etc.)
- Contract has penalties attached, making it much more difficult for staff not to do the work.
- Internal staff can gain skills from working with outsource providers.
- Lack of control over quality of system and service unless contract is tight.
- Sharing corporate knowledge with another organisation
- Losing resources, which may be subsequently needed if contract turns sour.

Candidates may highlight the critical importance of the contract between organisation and its outsourcing provider. Candidates may also refer to total outsourcing problems and situations that have been well documented.

From an MIS perspective, it is unlikely to be the best solution to use total outsourcing. Some MSS may be very strategically significant, and it is probably better to keep these in-house to ensure their continued operation and associated security/secretcy. Candidates may mention examples of such MIS, for example the corporate Data Warehouse or EIS. Candidates may also provide examples in companies of when outsourcing MIS has not been appropriate and its ramifications.

(Marks: for each relevant point regarding outsourcing overview 1 mark to a maximum of 5 marks. For good quality perspective on when its appropriate/inappropriate to outsource MIS - 3 marks. Total Part (c) = 8 marks)

TOTAL Q5 = 8 + 9 + 8 = 25 Marks

Question 5 Examiner's comments

This was also a very popular question and those candidates that knew all three concepts and were able to apply them to the MIS domain gained excellent marks.

Part (a) was well done in general. Some candidates did not keep the management support focus of the question in mind and therefore described concepts such as e-commerce and extranets with little relevance to the question. A number of other candidates made such vague statements about the internet and its possibilities, but without any explanation as to how it achieves these possibilities, that there was very little content that could be credited.

The answers to Part (b) were very mixed, as many candidates did not know what teleworking is, and instead described something akin to teleconferencing or telecommunications, neither or which were correct and therefore gain minimal marks. Those that knew about teleworking as a concept generally provided some very good answers.

Part (c) was reasonably well done, in that most candidates knew something about IT outsourcing in general. However, very few candidates said anything that was specific to MIS in their answer, thereby limiting their mark potential. Some answers were simplistic, suggesting, for example, that IT outsourcing is always to do with total outsourcing of IT or that IT outsourcing will always cost more in the long term. Like in previous examination questions, the “may” or “may not” words could have been used more frequently in some of these answers.