THE BCS PROFESSIONAL EXAMINATIONS
Professional Graduate Diploma

April 2007

EXAMINERS' REPORT

Management Information Systems

General comments on candidates' performance

Although many candidates had prepared well for the examination and gained high marks as a result, there was evidence that some had not prepared adequately. Marks are not given for general knowledge that the "man in the street" might possess and it should be noted that examiners require evidence of the deeper understanding that results from studying the recommended texts.

Candidates are advised to answer only the required number of questions, and all parts of the questions attempted. In their enthusiasm to complete the paper, some candidates omitted parts of the question, perhaps just answering parts a) and b) and omitting part c) altogether. Conversely, some candidates answered more than the required three questions; because of time constraints, this meant that there were often four, or even 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.

On a more positive note, the examiners agree that the best papers were of an extremely high standard.

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

Question 1

A medium-sized financial services organisation is seeking a replacement MIS Manager to restore confidence in the MIS function and to lead a redevelopment of its corporate systems.

The organisation's current systems were developed about fifteen years previously and use a central database. Apart from essential operating system changes and routine regulatory maintenance, no system enhancements have been implemented for many years and there is a large backlog of unsatisfied user requests. Some developments have been attempted but these have failed, due to user and MIS misunderstanding and conflict over their responsibilities for the different stages of development. The organisation recently employed some management consultants, whose general advice was that the central systems be replaced by distributed applications; but management are unsure about this.

As part of the selection and recruitment process for the new MIS Manager, you have been asked to make a presentation to demonstrate your suitability for the position. Prepare notes for the presentation to show your understanding of the following:

a) The role of the MIS Manager and the personal qualities required. **(5 marks)**

b) The involvement of user staff and MIS staff in all the development stages, from initial system request to post implementation review. **(5 marks)**

c) Suggestions as to how the backlog of enhancement requests could be reduced. **(7 marks)**

d) Evaluate the advice given by the management consultants. **(8 marks)**

Answer Pointers

Syllabus coverage: 5a - Management in organisations, managing MIS projects, 5b – distributed systems, management of information resources.

a) The role of the MIS Manager and the personal qualities required.

For this question, the examiners are looking for a general understanding of the management of the MIS function and hence the answer is not prescribed. The following is an example answer that includes the key aspects of managing staff, understanding change meeting requirements, adding value to the business etc.

Management of the MIS function is not easy. The running of a medium sized MIS function can be compared with running a business, with demanding customers, difficult suppliers, career-conscious staff and tight budgets and controls. The service provided by this business is subject to constant change due to an almost infinite demand for new facilities against a backcloth of changed hardware, software and package releases. Added to this is the need to effect urgent business and regulatory changes, safeguard the organisation's investment in MIS and to keep up-to-date with technological advances.

Faced with the constant need to reduce costs and improve efficiency, Boards are increasingly looking at the performance of the MIS function and seeking new ways of adding value to the business and improving service. Compared with other parts of the organisation MIS is often perceived by higher management as an out-of-control black hole of expenditure.

The person with responsibility for the MIS function will need the following personal qualities:

- aptitude for leadership
- able to influence peers, clients and suppliers
- able to explain complex concepts clearly
- able to determine and address clients' needs
- able to accept a significant level of responsibility and accountability

(5 marks)

b) The involvement of user staff and MIS staff in all the development stages, from initial system request to post implementation review.

Again there is no formal answer to this question, but candidates should be able to identify and understand the general responsibilities at each stage of MIS development. The following outlines the stages and responsibilities:

AREA	**RESPONSIBILITY**
General business and MIS strategy	Management/MIS management
Request for MIS work	Users
Scoping the request	MIS
Project leadership	Users or MIS
Prioritisation with other work requests	Users with MIS
Detailed definition of requirements	Users with MIS
Systems development	MIS
Systems testing	MIS
User testing	Users
System sign off	Users
User documentation	Users or MIS
Implementation	Users and MIS
Post-implementation review	User

(5 marks)

c) Suggestions as to how the backlog of enhancement requests could be reduced.

Again, no prescribed answer but an understanding of the issues and the possible solutions is required. Possible suggestions are below:

- Reduce the scope of activities (with user agreement)
- Reorganise to have separate development and maintenance teams
- Cost justify all requests and reject those where there is no justification
- Reject those that do not align with business/IT strategy
- Replace all systems with new systems with required functionality
- Replace systems with packages with required functionality
- Outsource the work
- Use temporary labour
- Encourage greater use of end-user computing
- Introduce new methodologies/TQM
- Improve staff morale/overtime working to catch-up

(7 marks)

d) Evaluate the advice given by the management consultants.

The use of distributed processing needs to be evaluated. This could first be done by consideration of the advantages and disadvantages:

Advantages of distributed processing

- Distributed systems allow more flexibility than centralised systems and provide a greater speed of response to local users
- Data stored in one central location is often vulnerable to system failures unless there are effective back-up facilities. Distributed systems help to reduce this vulnerability.
- The initial acquisition cost of processing data on one large mainframe is normally greater than a network of PCs.
- PCs in distributed systems are often far easier to use and maintain than a mainframe
- PCs are more flexible as they can provide graphic presentations on the user interface

Disadvantages of distributed processing

- Distributed processing can often occur in an uncoordinated manner, especially if there is a very large number of PCs from different departments all connected to one network
- Distributed processing in several different locations may depart from organisational procedures and standards
- Distributed systems pose security problems because of the wide distribution of data
- Distributed systems are heavily dependent on telecommunications technology which is itself often vulnerable to failure
- Users may have better control over the centralised processing of data
- In many cases the total cost of maintenance and management of a PC network is greater than that of a mainframe, so that total cost of ownership of the mainframe may be lower

These need to be considered and an argued case given for either following or ignoring the consultants advice. (8 marks)

(Total marks 5+5+7+8 = 25)

Examiner's Guidance Notes

Although part 'a' of the question clearly concerns both the **role** of the MIS manager and the **personal qualities** required, candidates frequently wrote about just one of these topics and limited their total mark as a result. Part 'b' was fairly straightforward and presented little difficulty for most candidates. However, part 'c' required candidates to look beyond the set reading material and to consider how the real life situation of enhancement backlogs could be approached. Although part 'd' required an **evaluation** of distributed processing, this was omitted from many scripts.

The point of this question was to assess practical understanding of some current issues in MIS. It was evident from many of the scripts that, whilst candidates had strong academic knowledge, they lacked appreciation of its practical application. Future candidates are advised to visit to local businesses to see and discuss use of MIS. Such visits would aid candidates' understanding and enable the course material to be put into context.

Question 2

A company wishes to use electronic methods to publish selected information for access by the following three groups of people: internal staff; suppliers; and the general public. Critically evaluate the various electronic means available and decide which is most appropriate for each group. **(25 marks)**

Answer Pointers

Syllabus coverage: 5d – evolution of internet applications

Again there is no set answer to this question, but the candidate is expected to consider the various electronic means available and evaluate which is the most appropriate. Considerations and alternative methods that would attract marks are set out below:

Internal

Groupware. Groupware is special software that recognises the significance of groups and small teams in offices, all of whom are contributing to the development of a project by providing functions and services that support the collaborative activities of groups and teams. Groupware connects the members of a team as they work on their own desktop computers. It allows people:

- to work together on documents;
- to schedule meetings;
- to access shared folders and databases; and
- to exchange ideas via e-mail.

Groupware software is very flexible and adaptable, allowing the users to define the work groups, who does what, and when they should do it. All tasks and duties for the group will be stamped with a date, time and author.

Intranet. Organisations can achieve enterprise-wide connection links by creating internal networks called intranets to provide internal access to data across the organisation. An intranet is an internal network based on internet and web network technology. An intranet uses the existing communications network infrastructure combined with internet and world wide web standards. Intranet systems can often remedy connectivity problems, for example, within a large company. Very often, departments in large companies grow independently of each other and a company can spend vast amounts of money on different client/server platforms that have been built without co-ordinating a central technology and without a unifying set of standards. Consequently, different departments may not be able to communicate with each other effectively as they may be using entirely different, non-compatible systems. A company may be able to link these departments by building an intranet system.

Email. Electronic mail is a system that delivers messages by sending text, pictures and other data between the users of information systems using ordinary telephone lines (PST) or other networks. Organisations use e-mail to communicate between employees, offices, customers, suppliers and other organisations. Some organisations have private e-mail systems that are not connected to the outside world but while this avoids some security concerns, it clearly limits the value of the system in expediting communications.

(8 marks for any one method)

External

Extranet. Some businesses use extranets to allow people from outside to have limited and controlled access to their internal intranet systems. For example, many organisations outsource some of their functions. An external outsourcing company may have limited access to an organisation's intranet through an extranet connection. Extranets are also useful for connecting a business with its customers, business partners or suppliers. Intranets and extranets are useful, easy to use and relatively cheap to install and maintain. They cannot, however, be used for highly complicated tasks such as payroll, accounting, calculating risks for underwriting, or sales and marketing because they are too slow for transactions that require high-speed processing.

Email. As above.

(8 marks for any one method)

Public in General

CD-ROM or internet. Electronic publication is where books, magazines and a wide variety of other materials are sold on CD-ROM or are available through the internet rather than as paper. For example, an organisation may have an internet website with order forms which require a website visitor to fill them in and send.

(8 marks for any one method)

(Eight marks for each method described/reasoned, with an additional mark depending on the use of reasoned argument in the answer, total 8+8+8+1=25)

Examiner's Guidance Notes

A straightforward question and there were some excellent answers that gained very high marks. Unfortunately, these were in the minority. Although the question required the candidate to 'critically evaluate' various electronic means of publication, such evaluation was missing from many scripts. Even those candidates that attempted an evaluation, only one method was listed for each defined group and generally there were limited descriptions of the suitability of each method.

Question 3

For EACH of the following technologies, provide an overview of the technology and how it can benefit an organisation's MIS capability.

a) On-Line Analytical Processing (OLAP) tool. **(7 marks)**

b) Wireless Access Protocol (WAP) device. **(5 marks)**

c) Intranet. **(6 marks)**

d) Videoconferencing. **(7 marks)**

Answer Pointers:

This question enables candidates to consider some of the more modern issues within MIS, and how they can be used beneficially within MIS. Possible answer pointers for each technology include the following:

a) OLAP Tool:

- Enables interactive, flexible information reporting, depending on need
- Typically revolves around a multi-dimensional database, contains information of interest to the manager. Database is optimised for managerial use.
- Typically, a WIMPs interface, along with drag and drop facilities, enables easy and flexible data manipulation.
- Simple mathematical functions are available to operate on data, such as percentages, ranks, totals, etc.
- Can be linked with a data warehouse as its principal source of data

Possible Benefits:

- Enable management reporting in a much more flexible and easy to use way than traditional reporting systems.
- Data can be integrated from several internal and external databases possibly via a data warehouse. OLAP enables integrated, flexible and efficient reporting on information that was originally from several isolated sources of information.
- Can be used to enhance business intelligence within an organisation, by enabling patterns and trends within the data to be determined and then enabling reasons for those patterns/trends to be identified, or by automatically seeking new relationships between data items (via data mining tools).

(4 marks for key features of OLAP described, plus 3 marks for possible benefits = 7 marks)

b) WAP Device:

- WAP stands for Wireless Access Protocol, so a WAP device is a device that has the ability to access Internet information using a wireless connection.
- WAP devices include laptops, Personal Digital Assistants, and Mobile phones.

Possible benefits:

- Accessibility of the Internet/Intranet and any MSS capabilities therein increases to almost anywhere
- Can be used to access the Internet/Intranet and any MIS capabilities therein 24/7
- Do not need a physical connection to access the Internet/Intranet and therefore any MIS capabilities therein

(2 marks for key features of WAP devices, plus 3 marks for possible benefits = 5 marks)

c) Intranet:

- an Internet that is private to an organisation

- candidates may discuss what one may find on an Intranet and/or how it is kept private (via use of appropriate Firewalls, for example)

Possible Benefits:

- Intranet can be source of information regarding the organisation and its policies/employees
- MIS capabilities may be made available via the Intranet – therefore available to employees outside the normal working day times and places.
- Management reports can be posted to the Intranet, which can then be viewed by others as web pages on the Intranet

(3 marks for key Intranet description, plus 3 marks for possible benefits = 6 marks)

d) Videoconferencing:

- At least two types; desktop & room-based, and candidates could include mobile videoconferencing as another type.
- Desktop requires PC + camera + microphone in order to send and receive images and sound. Low cost alternative to videoconferencing. People see each others when conversing remotely – usually good for 1-to-1 conversations
- Room-based requires a physical room for each participating group of people, with cameras and microphones in appropriate places around the room. Higher cost option, but good in many-to-many or one-to-many conversations. Picture within picture can show the different rooms on the same screen.

Possible benefits of videoconferencing:

- Saves travelling – both time and possibly cost, if the facility is effective
- People can converse with both sound and video, which is better than just sound alone (e.g., on the traditional telephone).
- Having videoconferencing and limited time, participants are more likely to keep focussed on the main issues and therefore meetings may be more productive.

(4 marks for key features of videoconferencing described, plus 3 marks for possible benefits = 7 marks)

(TOTAL Q3 = 7 + 5+ 6 + 7 = 25 Marks)

Examiner's Guidance Notes

This was the most popular question on the paper (attempted by 87% of candidates), and the average mark was a respectable 12 marks out of 25. Of those attempting the paper, 75% of candidates were successful in achieving the pass mark (i.e., 10 out of 25 marks), which was pleasing.

The question requires candidates to describe four MIS concepts, and how they can enhance an organisation's MIS capabilities. The majority of candidates did well in describing the concepts, but failed to describe clearly the benefits of the concept in terms of MIS. Some provided some benefits, but these were not always of an MIS nature (for example, allowing salesmen to phone in orders from the customer premises using a mobile phone is not a "mainstream" MIS issue). A few candidates gave benefit statements that were just too vague for more than minimal marks (for example, saying that an Intranet helps management make decisions – this could equally apply to all the MIS concepts listed in the question and more!)

Specifically with regard to part (a), several candidates thought OLAP tools work directly off a data warehouse, and that a data warehouse is multi-dimensional. This is not usually the case, as a data warehouse tends to be relational in nature, and an OLAP tool has its own, possibly multi-dimensional database (which could be seen as a data mart which is sourced from a data warehouse).

With regard to part (b), many candidates thought the question was about "WAP" rather than "WAP device" as it is stated in the sub-question. Whilst information about the former is expected as part of the answer to the latter, the emphasis of the question is on the device and not solely on the protocol.

With regard to part (c), there were many answers where candidates were describing a private, physical LAN configuration rather than an intranet. There were also other candidates that confused an intranet (which is internal to a company) with an extranet (which includes key suppliers, customers and partners, as well as internal company employees).

With regard to part (d), many candidates described only one type of videoconferencing (e.g., room-based) without acknowledging the existence of any others (e.g., desktop or mobile). A lot of candidates considered that videoconferencing can only occur via the Internet, and some candidates felt that room-based videoconferencing requires participant computers in each of the rooms, which is not the case. Many thought that a videoconferencing meeting was as good as a traditional face to face meeting for group discussion and decision making, despite the well known technical difficulties with videoconferencing technologies which can restrict meeting practices significantly.

Question 4

a) Explain the Traditional approach and the Evolutionary approach to developing MIS. **(6 marks)**

b) Propose and justify the development situations to which each approach is the most appropriate. **(7 marks)**

c) The Finance Manager of a local company wishes to develop his own spreadsheet-based Decision Support System (DSS) that will help him to determine the financial feasibility of any potential project that the company is considering. Discuss the benefits and potential problems that might arise as a result of the DSS being developed by the Finance Manager. **(12 marks)**

Answer Pointers

This is a relatively straightforward question looking at MIS development aspects.

Part (a) requires candidates to consider what the Traditional approach and the Evolutionary approach to developing MIS are. Answers may include the following points:

Traditional approach:

- Sequence of phases, starting from requirements gathering and finishing with system maintenance. One stage starts when the preceding one finishes.
- Defined deliverables are produced at the end of each of the phases, which are signed off by management to confirm their completeness and accuracy.
- Any backtracking to previous phases is considered as a sign of weakness in the activities performed within earlier stages of the development.

Evolutionary Approach:

- Where a prototype is developed and evolved into an appropriate final system.
- There is frequent communication with the end user to demonstrate the current prototype and seek further amendments to incorporate. There is an expectation that the prototype system will not be right first time and will require successive developments in order to satisfy the end user's needs.
- The prototype could be vertical (small part of the system in depth) or horizontal (breadth view of the system, with limited underlying functionality) in nature.

(3 marks for overview of each development approach * 2 approaches = 6 marks)

Part (b) asks candidates to propose and justify the development situations to which one might apply each development approach. The following points could be included within an answer to this question.

- The traditional approach is more suited to larger scale, complex projects, where the requirements can be determined at the outset of the project. The requirements need to remain static for a sufficiently long period of time so as to make it feasible to develop a system to support current requirements, using this "non-backtracking favouring" approach. Larger Management Reporting Systems (MRS) and DSS for repetitive use may be developed using this approach.

- Evolutionary approach is more suited for smaller projects, and where the requirements are hard to identify at the outset and/or rapidly changing. The prototyping nature of the development enables changes to requirements to be considered frequently and incorporated. Indeed, the evolutionary system may never seem to stop but continually evolve in the face of rapidly changing requirements. Smaller and/or one-off DSS are commonly developed using this approach.

(For each situation identified, or appropriate justification for situation, 1 mark to a maximum of 7 marks)

Part (c) is an End-User Computing (EUC) question, getting candidates to consider the positive and negative consequences of a manager developing his own Decision Support System (DSS). Positive outcomes include:

- He does not need to communicate his requirements to a third party, who then develops the DSS. As such, there is no misinterpretation of requirements possible, and the manager will get what he thinks is an appropriate support system.
- There is no additional cost for development by third parties.
- He will know the DSS, having developed it, and therefore will not require additional training and time to become familiar with it.
- He does not need to wait to implement the DSS, as he may do if it were done by the central IT department.

Negative consequences include:

- If the Finance Manager gets the model wrong due to his in-experience with the software and/or the construction of models, then he may end up making decisions that are fundamentally wrong. This could cause the organisation a lot of damage, financially and otherwise.
- There may already be an appropriate DSS available to him yet he is unaware of this. A staff member within the IT department, however, would have realised that the already developed DSS would be an appropriate and standard approach to feasibility decisions.
- The time and effort put in by the Finance Manager to develop the model may have been put to better use, with respect to the use of his expertise (which is not computing!) and the organisation's achievement of its objectives.
- The system may not be well maintained, as the Manager may not see this as important – environmental changes may occur without being reflected in the system, leading eventually to possibly wrong decisions and their consequences.
- The system may not be programmed in a structured and organised manner, and therefore difficult to understand and/or difficult to maintain by anybody other than the Finance Manager.

(6 marks for positive consequences (1 mark per valid point or comment made), plus 6 marks for negative consequences (1 mark per valid point or comment made) = 12 marks)

(TOTAL Q4 = 6 + 7 + 12 = 25 Marks)

Examiner's Guidance Notes

This was also a fairly popular question (attempted by approximately 70% of candidates), and the approximate average mark was a very reasonable 13 out of 25 marks. Of those attempting the question, about 75% pass the question.
Part (a) was generally well done by most candidates, although many seemed to forget that there were only 6 marks available for this part, and provided answers that were several pages in length. Some thought the evolutionary approach included throwaway prototyping, which is incorrect – the evolutionary approach is all about the prototype evolving into the final system. Some provided answers to part (a) that were more appropriate as answers to part (b), and therefore some of the marks for this question were carried over to part (b). In the same way, some of the part (b) answers, that were considered more appropriate for part (a), were merited against part (a) answers.

There were varying degrees of success in the answers to Part (b). One of the most notable issues about the candidates' answers to this sub-question was the inability of many to consider the interrelationships between the different situational aspects that they described. For example, a candidate might say that the evolutionary approach is more appropriate than the traditional approach when either faced with a smaller project or when faced with a project that has unknown requirements. However, if faced with a potential project that is large and has unknown requirements, what would be the most appropriate approach? Another problem was the lack of MIS focus within the answer: several candidates gave situational aspects that had no applicability to MIS (for example, the traditional approach is good for developing mission critical systems – just how many MIS can be considered "mission critical"?)

Part (c) was done well by many candidates, as they understood the crux of the question was about whether EUC by the Finance Manager should or should not take place in this particular case. Several candidates misunderstood the question, leading to answers as to whether outsourcing or in-house DSS development should take place, or what the benefits and weaknesses are of spreadsheet-based DSS, or whether the DSS should be spreadsheet-based or not. These misunderstandings meant that the marks candidates could attain were significantly reduced.

Many candidates provided some good reasons for and against EUC by the Finance Manager. However, several candidates did not always follow each point right the way through to its eventual implication (for example, the lack of IT knowledge of the Finance Manager may lead to errors in system development, which may then lead to wrong results being presented by the DSS, which may subsequently mean wrong decisions made, which may lead to substantial financial loss and even threaten the survival of the company). As in previous years' examination papers, a few candidates considered the term "MIS" to represent a person rather than a corporate function/capability.

Question 5

Management can be viewed as comprising a set of activities, which includes planning, coordinating, monitoring and controlling.

With the aid of suitable examples, explain:

How Decision Support Systems (DSS) can aid the planning activity of management.
(9 marks)

How Executive Information Systems (EIS) can aid the monitoring and controlling activities of management. **(9 marks)**

How Office Automation Systems (OAS) can aid the co-ordinating activity of management.
(7 marks)

Answer Pointers

This is a question where the candidates can use examples to justify the situations expressed in the question, that are specific to what they have read during their studies.

a) How Decision Support Systems (DSS) can aid the planning activity of management.

Decision Support Systems can support all activities of management, including planning. Candidates may explain what a DSS is – a system that supports managerial decision making via the use of interactive models and data – as part of their answers. They could then describe the Data-Dialog-Model (DDM) paradigm of DSS and say that it is the model base that provides the models for planning decisions, with the associated data being stored in the data base component. They may also talk about the different types of model that can found within a model base, that may aid planning decisions; simulation, linear (mathematical) programming, decision trees and forecasting models can all be set up to support planning decisions.

Candidates may provide examples of DSS in planning mode to show the ways in which they can support planning activities. Example DSS in planning mode are the following:

- A DSS to support project selection given scarce resources – e.g., investment projects
- A DSS to support production planning and scheduling
- A DSS to support decision making under risk, for example whether or not to transport nuclear waste through a given city location.
- A DSS to enable the forecasting of sales, and therefore the resources need to support those sales.
- A DSS to support pricing decisions for a company's product portfolio.

(For an implicit or explicit understanding of DSS – 2 marks, plus for each valid justification point or example made with respect to planning - 1 mark, to a maximum of 7 marks = 9 marks)

b) How Executive Information Systems (EIS) can aid the monitoring and controlling activities of management.

Candidates may start with a definition of EIS, something similar to the following: an EIS is a computer-based system that provides appropriate management personnel with quick and easy access to information. They may discuss the fact that EIS started life as senior management tools, but subsequently become enterprise-wide management tools as the use of EIS was found to benefit all management levels within the organisation.

It is expected that candidates will discuss the Key Performance Indicator (KPI) monitoring available within most EIS. This then enables the subsequent control of key aspects of the company. KPI monitoring is typically portrayed in the form of a dashboard in modern EIS software, which visually shows, for an important corporate issue, whether the company is fairing well (green), borderline (yellow) or badly (red). The EIS also would typically allow drill down from a KPI of interest so that the manager can examine exactly why the KPI performance is as it is. Once the cause is located, the manager can then put in steps to rectify the position if need be (i.e., control the situation as required).

(For an implicit or explicit understanding of EIS – 2 marks, plus for each valid justification point or example made regarding monitoring and controlling - 1 mark, to a maximum of 7 marks = 9 marks)

c) How Office Automation Systems (OAS) can aid the Coordinating activity of management.

OAS are computer-based systems that support some of the functions that are typically carried within an office environment. Typically desktop software form part of the facilities of an OAS, but there are also functions such as e-mail and computer conferencing (video, audio and/or text-based) and even groupware. E-mail and videoconferencing can result in messages being passed that enable coordination of activities. Groupware can aid coordination, by providing an environment where people can share documents and information, and can jointly work on authoring a document. The sharing of information and documents can support coordination of activities, and a joint authoring facility controls how a group is coordinated when performing the authoring activity.

(For an implicit or explicit understanding of OAS – 2 marks, plus for each valid justification point or example made with regard to coordination - 1 mark to a maximum of 5 marks = 7 marks)

(TOTAL Q5 = 9 + 9 + 7 = 25 Marks)

Examiner's Guidance Notes

This was also a popular question (attempted by approximately 64% of the candidates). The average mark was a very disappointing 8.5 out of 25 marks, and only about a third of those attempting the question passed.

The principal reason for the many poor answers to this question was the generally lack of application to management within these answers. Each part of the question requires candidates to describe how a particular type of MIS supports one or more managerial activities. Many candidates described the particular MIS mentioned in the sub-question (and this was done reasonably well by most) but failed to show how the MIS could be used to support the stated managerial activity or activities. This application to management work was the main focus of the sub-question and hence was where the majority of the marks for the sub-question were apportioned.

With regard to part (a), many candidates clearly knew what a DSS was, and knew something about the mathematical models that could be embodied within the DSS (e.g., forecasting, simulation, optimisation). However, many failed to show explicitly how these modelling techniques could be used within planning activities. The best answers provided numerous examples to illustrate the ways in which DSS could be used to aid planning within organisations.

With regard to part (b), there appeared to be some confusion as to the scope of an EIS. Several candidates said that EIS are about identifying Critical Success Factors (CSFs) for a company, whereas in reality they are more to do with monitoring and controlling existing CSFs than identifying new ones. Others thought forms-based queries and SQL are typically ways of interacting with an EIS, which is inaccurate – most EIS are interacted with via a GUI "drag and drop" style interface.

Many candidates had no idea what an OIS is, comparing it to a Transaction Processing System, an ERP system or even an Expert System. Of those that did, many failed to provide any valid examples to illustrate where coordination could be supported by an OIS. Of the sub-questions, this was the most disappointing, with many candidates gaining just 2 marks (essentially for their description of OIS) out of a possible 7 on offer.