

BCS THE CHARTERED INSTITUTE FOR IT

BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 6 Professional Graduate Diploma in IT

MANAGEMENT INFORMATION SYSTEMS

March 2016 - Afternoon

Time: THREE hours

Answer **any** THREE questions out of FIVE. All questions carry equal marks.

Answer any Section A questions you attempt in Answer Book A

Answer any Section B questions you attempt in Answer Book B

The marks given in brackets are **indicative** of the weight given to each part of the question.

Calculators are NOT allowed in this examination.

Section A

Answer Section A questions in Answer Book A

General comments on candidates' performance:

The overall pass rate was 61%. There is evidence that some candidates in this session used "canned" answers (that were based on model answers of a previous session's examination paper) in response to what was essentially a different question; others provided a largely irrelevant answer derived solely from the individual words of the question. In both cases few, if any, marks could be attained.

Candidates would benefit from exam preparation and revision enabling them to provide answers with the required depth of knowledge and understanding. Several candidates did not attempt all parts of a question, thereby reducing the possible maximum mark that they could attain. There was also evidence that some candidates were misinterpreting questions; candidates should take time to truly understand the requirements of a question before attempting to answer it.

There were some excellent papers, for which the relevant candidates should be congratulated. The highest marks were given to those who provided comprehensive, relevant, reasoned, structured and detailed answers and were able to draw upon familiar professional practices and studied academic resources.

An indication is given below of the expected answer points. Marks were given for alternative yet appropriate answers.

SECTION A

A1. Your organisation, a retail company specialising in consumer electronics, wishes to replace the existing management information system (MIS) it uses for online sales reporting. The aim is to provide users with a seamless service over a variety of web clients and platforms.

a) Discuss THREE design considerations which will be critical to the success of this ambition.

(12 marks)

b) Write a report which introduces non-technical Board members to the concept of the new MIS information system and explains how it will be designed to ensure the system is successful.

(13 marks)

Answer pointers:

a) Depending on their background, candidates may have a number of design considerations with regard to MIS development. They are likely to have at their core the principles of:

- Confidentiality
- Integrity
- Availability

They may make specific reference to the need to provide a good user interface on devices of different screen size, resolution, processing power and speed of network connection, ranging from a small feature-phone to a large desktop screen.

Up to 4 marks were awarded for each of THREE design considerations.

b) "Scoping document" may be a range of styles depending on the background of the candidate but will have specific attributes for those with detailed project management experience.

The term "non-technical" is important, to demonstrate that candidates can communicate effectively with non-specialists in a corporate environment. The document should be presented in a standard business format in order to score highly.

Up to 3 marks were awarded for the style and format of the scoping document.

Up to 5 marks were awarded for the validity of the MIS concept described, and up to 5 marks were awarded for the design criteria suggested.

Examiners' comments:

This question was attempted by around half the candidates who attended. Approximately half of those who attempted it obtained or exceeded a pass mark.

While a few very good answers were provided, a large number of responses were of poor quality.

Candidates should understand that, however well formatted an answer, it will not gain any marks if it is merely a rearrangement of the question.

A2. You are the newly appointed Project Director of a company which has operated in the IT industry for nearly 50 years. When you take up your post, you are surprised to find that the organisation does not use one of the standard project management methodologies but, instead, relies on a series of processes developed in-house over several decades.

With the aid of THREE specific examples, discuss whether or not you should seek to change the policy of the organisation and move to a standard project management methodology.

(25 marks)

Answer pointers:

Examples of “good” and “bad” aspects of having a bespoke internal project management system might include, but are not limited to:

- A system closely matched to the business of the organisation and how it is managed
- Needs specific knowledge of the organisation and schema in order to be effective
- Limits the ability to transfer skills in and out of the organisation
- Difficult to grow the project team quickly in response to changing demand
- Could retain expertise which might otherwise move elsewhere
- Difficult to attract skilled project management staff from outside
- Potentially a lack of incentive for change

The approach to this report will depend on the background of the candidate but should be presented in a standard report format. The assumptions expressed should support the reasoning presented by the candidate. The report should provide a cogent argument for or against the policy.

Up to 4 marks were awarded for the style and format of the report and up to 7 marks were awarded for each of THREE examples.

Examiners' comments:

This question was attempted by around half the candidates for this examination. Around half of those who attempted the question attained or exceeded a pass mark.

The range of quality in the answers was large, with few good responses being obtained.

Some candidates lost marks because they did not supply the number of examples requested. Others gave more examples than requested, with the surplus examples gaining them no marks.

A3. Customer Relationship Management (CRM) systems are a key component of the information infrastructure for many organisations.

a) Discuss THREE essential requirements of a successful CRM. **(12 marks)**

b) With reference to examples you have studied or are familiar with, show how the failure or absence of ONE of these requirements can cause significant difficulty to an organisation. **(13 marks)**

Answer pointers:

(a) The essential attributes could come from any aspect of good information systems practice and could include, but would not be limited to, the following:

- Accuracy
- Timeliness of information
- Change management and tracking of data modification
- Quality and granularity of security policy and authority model
- High up-time for system access
- Good control over data quality
- Each data element exists only in one location
- Accessible through multiple platforms with common user experience
- Auditability
- Fast interactive response
- Strong and flexible reporting features

Up to 4 marks were awarded for each of THREE standard CRM requirements.

(b) This could review any of the very public failures reported in the media in recent years, or stem from the candidate's own experience; however, it must be consistent and address one of the attributes discussed in a).

Up to 13 marks were awarded for the discussion and the example(s) given.

Examiners' comments:

This question was attempted by around three quarters of those candidates who attended. Approximately three quarters of those who attempted the question attained or exceeded a pass mark.

Most candidates who passed this question showed a good familiarity with the concept and design attributes around CRM systems. Many were well prepared to deliver a cogent answer to the question.

A number of candidates gave very weak answers based on low-level, generic material which did not score well in an exam at this level.

A few candidates lost marks by not providing the number of requirements requested.

SECTION B

B4. According to Turban et al. (2011), Business Performance Management (BPM) can be seen to be the convergence of Corporate Strategic Planning and Business Intelligence (BI).

a) Provide an overview of the key steps within a Corporate Strategic Planning process, identifying any strategic planning techniques that could be employed.

(15 marks)

b) Describe a suitable BI system that could be used directly by a senior manager to monitor company progress towards achievement of its corporate strategic plan. Include in your description an overview of its possible architecture and how the relevant information could be presented to the senior manager.

(10 marks)

Answer pointers:

This question is about corporate strategic planning and its monitoring via a suitably developed electronic dashboard (BI system) facility.

Part a) requires candidates to provide an overview of a typical (corporate) strategic planning process. Aspects that may be included within answers include the following:

- **Planning/scoping the process:** Determine the scope of the corporate strategic planning process, the time horizons (of planning and of review/revise operations), who is responsible for the process and who is to be involved.
- **Conduct a current situation analysis,** reviewing “where the company is currently” in terms of its product “value” chain, markets, systems, organisational structure, etc. This provides a basis from which new developments, strategies, etc. need to be considered. Existing documentation, such as organisational charts, can be very useful during this activity. The current strengths and weakness of the organisation can be identified from this analysis.

- **Conduct an environmental scan**, looking at opportunities for, and threats to, the organisation. A competitor analysis may explicitly form part of this “scan”. PESTLE analysis may also serve as a way of describing the environment in which the organisation is (or may be expected to be) embedded. Techniques such as Porter’s five forces model can aid in the assessment of suppliers, customers/markets, and existing and potential competitors/substitutes, and what strategies might be employed to counter threats/exploit opportunities.
- **Bring together internal and external views of the business** into an integrated description of strengths, weaknesses, opportunities, threats. SWOT analysis is a key technique that can be employed in this activity.
- **Identify Critical Success Factors (CSFs) for the organisation:** Identification of those key aspects which must succeed in order for the organisation to survive and prosper.
- **Perform a “gap analysis”** of the current situation, in the light of environmental pressures/opportunities and the CSFs identified. This may serve to identify aspects that could be pursued within its strategic plan; to overcome weaknesses, capitalise on strengths, exploit opportunities and reduce threats, and ensure effective presence of the CSFs. A list of aspects/actions may result, to each of which a priority level may be attached.
- **Create a strategic vision:** creating a view of what the company will hopefully look like in the future. This will be couched typically in the form of a vision and/or mission statement and will serve to guide the priority of actions (which may reinforce existing priority levels from a previous step) undertaken within the subsequent strategic plan.
- **Creating a strategic plan** covering what needs to be done to reflect the strategic vision. Aspects of the plan will be prioritised, which will reflect the priority identified within the gap analysis/strategic vision creation but will also reflect other matters, such as availability of finances, any scheduling necessities and levels of risk.
- **Creating strategic objectives and targets/goals:** the “how to get there” in terms of specific actions and specifically linked to measurable targets/goals (i.e. some form of KPIs).

(For quality of description balanced against the comprehensiveness of the coverage of the process – 10 marks, plus 5 marks for example relevant techniques = 15 Marks.)

Part b) is about the development of a suitable BI system to enable senior management’s direct monitoring of progress towards the achievement of the corporate strategic plan.

The key is in the question - senior management monitoring progress of corporate strategic planning through direct system use - which should indicate to the candidates the necessity of some form of electronic dashboard (EIS) facility.

Candidates need to describe a possible architecture, which would probably incorporate some form of underlying data repository (data warehouse/data mart) to hold the key monitoring data in a centralised data store (this having been extracted, transformed and integrated through the use of appropriate ETL operations) and at the appropriate level of granularity (and linked to the appropriate dimension hierarchies). This data is then presented directly to the user in an appropriately summarised form via a dashboard, with appropriate capabilities to drill down into more detailed levels of the data via interaction with the dashboard (e.g. via hotspots linked to drill down capabilities).

Candidates may describe the care that is needed to ensure the dashboard presents the correct data in a manner that enables the effective and efficient assimilation of the information presented and the direct use of the senior manager – so very easy to understand and use, effective use of colour (RAG/Traffic Light Colour Coding system to indicate achievement against targets (KPIs), not too many bright and varied colours to distract), effective graph use (use the right one for the nature of the data being presented, such as trends versus actual values), ensuring all non-data items are kept to a minimum and de-emphasised (e.g. by positioning or by its muted colour shade), and using the “prime real estate” of the dashboard (i.e. the top left corner) effectively. A diagram of the dashboard interface may be provided by candidates to illustrate its presentation of information to the senior manager.

(For overall plausibility of the system proposed – 2 Marks, plus description of possible relevant architecture – 4 Marks, plus interface-related issues in relation to the effective presentation of information to the senior manager – 4 Marks = 10 Marks.)

(Total QB4: 15 + 10 = 25 Marks)

Examiners' comments:

This was attempted by just over a third of candidates but, unfortunately, answers were generally poor, with an overall average mark attainment of 8 out of 25. The evidence shows that this was principally caused by poor Part a) answers, which required candidates to describe a process for corporate strategic planning. Very few answers provided an overall process of any quality. The vast majority of candidates focused on stating facts about the techniques that could be employed but did not embed them within any overarching corporate strategic planning process. This meant that the majority of the marks (10 out of 15 marks being allocated to the overall process and its coherence/quality) were unable to be awarded.

Part b) was generally better attempted, as there is evidence that candidates picked up on the hints in the question: senior management, direct use, monitoring achievement of strategic plan, etc. Some candidates gained full marks, as they presented a thorough, coherent and relevant proposal. However, several candidates described planning (rather than monitoring) tools, and others provided very unfocused proposals that covered every possible BI system functionality they could remember (e.g. data warehousing, neural networks, OLAP, optimisation, etc.); these proposals incurred few, if any, marks.

B5. Discuss the key similarities and differences between **EACH** of the following pairs of MIS-related concepts:

a) Enterprise Resource Planning (ERP) data repository and Data Mart. **(7 marks)**

b) Decision Support System (DSS) and Group Decision Support System (GDSS). **(6 marks)**

c) Data mining tool and On-Line Analytical Processing (OLAP) tool. **(7 marks)**

d) Software as a Service (SaaS) and virtual organisation. **(5 marks)**

Answer pointers:

This question allows candidates to show a breadth of understanding of key MIS systems/concepts. The following table provides some possible comments that could be made by candidates:

Pair	Similarities	Differences
a) Enterprise Resource Planning (ERP) data repository and Data Mart	<p>Both are data repositories</p> <p>Both can be important to the support of management decision making</p>	<p>ERP data is arranged in a process-oriented manner, whereas Data Mart data is arranged from a management reporting focus (use of star schemas and star schema design process)</p> <p>Data mart is for a specific department or subject-specific decision support requirement, whereas ERP data spans the whole organisation (as it is the repository for ERP module operational data).</p> <p>The data in the ERP is kept in a normalised form, whereas the data mart may be summarised/denormalised.</p> <p>Data may be kept longer within a data mart than in an ERP data repository.</p> <p>ERP data repository could form the data feed for the data mart but not the other way around.</p> <p>ERP data is updatable, whereas data is read only in the data mart.</p>
b) Decision Support System (DSS) and Group Decision Support System (GDSS).	<p>Both support management decision making</p> <p>Both can be defined in terms of the DDM paradigm.</p> <p>Both can have individual data and models.</p>	<p>A DSS focuses its support on individuals making decisions and a GDSS focuses its support on groups making combined decisions.</p> <p>A DSS tends to support decision making via use of data and individual models, the GDSS via the use of group decision making techniques provision, such as electronic brainstorming and Nominal Group Technique (NGT)</p> <p>GDSS may include video-conferencing capabilities, whereas DSS do not.</p> <p>The data- and model-oriented DSS categorisation tends not to be used in relation to GDSS.</p>
	Both are ways to analyse data within a	Data mining tools allow for automatic discovery of patterns, which is not possible within OLAP tools.

c) Data mining tool and On-Line Analytical Processing (OLAP) tool.	(typically structured) data repository Both can involve user-initiated search of the data	OLAP tools typically focus on involve multi-dimensional reporting, which is not the focus of data mining tools. Data mining tools rely heavily on mathematical (statistic) and AI-based algorithms/modelling, whereas OLAP tools embrace only simple mathematical calculations like totals, percentages and simple forecasting.
d) Software-as-a-Service and virtual organisation.	Both rely on the Internet A “reliance” on the service of other organisations – for a company to utilise the SaaS software (and underlying infrastructure) provided by another, and virtual organisations to rely on ventures with other virtual providers/suppliers	One is about the provision of a service, whereas the other is about organisational structure/location. Virtual organisation may incorporate SaaS but not vice versa.

Marks: For EACH pair, 1 mark for each salient point regarding a similarity or difference, to a maximum of 7 marks (Part (a)), 6 marks (Part (b)), 7 marks (Part (c)) and 5 marks (Part (d)).

(Total QB5: 7 + 6 + 7 + 5 = 25 Marks)

Examiners' comments:

This was an extremely popular question and was attempted by approximately 95% of candidates. The average mark attained was just over 10 out of 25 and there were a few candidates who gained close to full marks. However, the quality of answers was wide ranging; there were many answers that were either too vague to attain any more than a mark or two, or simply provided the opportunity for candidates to list lots of facts about each concept in turn, with no comparisons (i.e. similarities/differences) drawn.

The evidence shows that the question to Part a) was misinterpreted by a number of candidates to mean that three concepts needed comparison: ERP, Data Repository and Data Mart. Of those who did interpret the question correctly, several answers reflected a lack of basic understanding of both concepts, particularly with respect to an ERP data repository. However, most managed to provide one notable similarity (e.g. they are both data stores) and one notable difference (e.g. an ERP data repository is enterprise-wide, whereas a data mart supports a particular function or department).

Part b) was adequately answered overall, although many omitted to mention the typical differences in the techniques applied by each system to support decision making.

There was little real understanding of data mining within several candidates' answers to Part c). One inaccuracy that was frequently stated was that data mining is “offline” whereas OLAP is “online” – firstly, what “online” and “offline” mean in this situation is not made clear and, secondly, data mining has definitely been employed in online (and indeed (near)realtime) situations, for instance to detect financial fraudulent activities as they occur.

There was probably the most variation in the quality of understanding exhibited in answers to Part d). Most candidates had some idea of SaaS. However, several candidates wrongly equated virtual organisation to either e-commerce or virtual reality and some simply did not know what a virtual organisation is.