

BCS Higher Education Qualification

Diploma

October 2021

EXAMINERS' REPORT

ADMS

General comments

A reasonably good set of scripts from those who attempted this examination.

Question number: A1

Syllabus area: 5.1

Total marks allocated: 25

Examiners' Guidance Notes

This question was a popular question in Section A and was attempted by a large majority of candidates. Candidates produced a good range of answers.

Part a)

Generally, candidates answered this question well, however there were a large number of candidates who focused on logical security measures, such as secure passwords and encryption, rather than considering the physical measures. A further group of candidates described both physical and logical measures. There was also a smaller number of candidates describing protection from natural disasters, however the focus of the question was on cyber security. It is important to answer the question, and not to write everything one knows about all forms of security.

In terms of structure of the answers, not all candidates identified all elements requested: a description of physical security, typical breaches and mitigation.

Many candidates outlined various mitigations and detailed approaches to achieve logical security, rather than the asked for very short 'naming' of areas addressed by logical security.

Part b)

Most candidates identified that confidentiality here is about preventing unauthorised access and then outlined various measures to ensure suitable login. A fair number also identified views and other database design, and implementation approaches which support confidentiality.

The question was about data integrity, while many answers looked at database integrity (such as referential integrity). The key concept in the answer was to identify that data integrity is about ensuring and maintaining authenticity of the data, and the database structure alone does not achieve that; there are additional controls needed as per the answer pointer.

Part c)

Answers generally were good in identifying that a query is changed like that outlined in the answer pointer. Candidates were also generally good in identifying more input validation and

parameterised queries as good solutions. Some answers also mentioned system updates as an important counter measure. What was not always as clear as it should have been was the statement that this is a web attack, and hence made as a result of providing query elements through a GUI that is made for a different purpose.

Answers here varied between identifying that we are looking at a human error, which can be counteracted by input checks etc and also work conditions/pressure, to answers that simply showed little understanding of the problem. The latter answers essentially stated that good database design (primary keys, referential integrity) will address this. While database design features can alert to some problems (e.g. an empty key field) they are not the solution for stopping the problems.

Part d)

Generally good attempts were made. Sometimes answers lacked focus and homed in on only one or two aspects in unnecessary detail, rather than identifying more aspects. Also, some answers elaborated on hosting in the cloud, which while emerging practice, was not part of the scenario and hence did not help to further the answer.

Question number: A2

Syllabus area: 1.1, 1.2, 2.2

Total marks allocated: 25

Examiners' Guidance Notes

This question was a popular question in Section A and was attempted by a large majority of candidates. Candidates produced a good range of answers.

Part a)

Overall good answers from most candidates. Some answers picked up one or two aspects only and expanded on these, rather than focusing on providing a more varied list of pros and cons like that in the answer pointer.

Part b)

Answers did generally capture what was required. Typical mistakes missed levels of either selection or projection. Candidates often did not provide the detail of the keys for the join. A very small number of candidates confused the concepts/symbols for selection and projection.

Part c)

Good answers in general, sometimes lacking justification or detail. On parts Y, some candidates concluded that a pass through the database is required, however, as the relevant information is available in the index this is not needed. Also, on the answer for part Z there is no sorting required. All that is needed is accessing the data in the order of the already ordered index – an insight that several answers lacked.

Question number: A3

Syllabus area: 2.3, 4.2

Total marks allocated: 25

Examiners' Guidance Notes

This was a popular question in Section A and was attempted by a large majority of candidates. Candidates produced a good range of answers.

Part a)

Candidates were usually aware of the ACID properties and could explain their relevance. Sometimes descriptions lacked detail or were imprecise. The most common problem was the lack of examples, or in some cases that the example did not show the relevant aspect.

Candidates generally understand the notions of rollback and commit, but descriptions sometimes lacked precision, and examples were not always included.

The 2PC protocol was either fairly clear and precisely outlined, or incorrectly described, along with the locking mechanisms for transactions. 2PC is for distributed databases, while locking ensures ACID properties when processing parallel transactions.

Part b)

Answers generally showed the relevant understanding. Candidates would have benefitted from saving time in answering this part by providing more focused answers, rather than exploring a much wider topic of recovery.

Overall, reasonably good answers, focusing on the scenario. However, some minor errors of interpreting what needed doing occurred occasionally. Some candidates provided generic answers rather than considering the specific scenario provided.

B4	Generally performance was lower than expected. This question was also unpopular with only a quarter of candidates attempting it. The main topic area covers Distributed databases.
Syllabus	Section 2.5
	Part a) Most candidates understood the concepts associated with Data Independence and the benefits that it brings.
B5	This question was the least popular. This question covered an area of the syllabus concerned with Object Oriented concepts applied to databases, including Extended ER modelling and Object Relational Frameworks.
Syllabus	Section 3.1
a)	This part was generally not well answered, with candidates seeming to know the components of an expert system, but unable to describe them in the detail required at this level. Many just named the components. It is worrying that candidates are learning topics off by heart without understanding what it is they are remembering. For example, it is not sufficient to know that an inference engine exists; candidates must be able to show an understanding of what it does.
b)	Candidates were expected to provide 3 or 4 ways in which an ORM framework overcomes the impedance mismatch.
c)	Many candidates struggled with this part of the question. Some candidates seemed to assume that table and database partitioning were somehow distinct and not the same concept. Again, examples of table partitioning were expected to show that candidates understood the practical outcomes of both vertical and horizontal partitioning.