BCS Higher Education Qualification

Professional Graduate Diploma

November 2020

EXAMINERS' REPORT

Advanced Database Systems

General comments
There were fewer candidates than in recent sessions. The overall performance was very much inline with that in recent previous sessions. There was a large variance in popularity of the questions. Two had very few attempts and on one of these candidates scored highly, but there were a number of very weak attempts at the other. Syllabus and reading list reviews are in process at time of writing.

Question number: A1
Syllabus area: 2.2 2.4
Total marks allocated: 25
Examiners' Guidance Notes
Part a) covered execution costs of SQL queries given the size and structure of disk files such as number of blocks and properties of indexes. The candidate had to work out the best strategy that the query optimiser would use **Part b)** extended part a) above by considering the introduction of an index on the city column and how this affected the performance of three different queries. **Part c)** This part required more general answers covering security controls that are needed following loss of confidentiality, integrity and availability. Each threat to security is handled differently. **Examiner Comments** This was a fairly unpopular question attempted by around 20% of candidates. Overall, the performance was in line with expectations with most candidates gained a pass mark on this question. There were some major concerns with candidates' answers highlighted as follows Part a) It was surprising that a number of candidates failed to correctly work out the associated cost of the queries - query2 in particular. Lack of knowledge of B-tree indexes might be the reason. Part c) Quite a few candidates clearly didn't read the question. Many candidates assumed the answer was to write all they knew about each topic disregarding the security aspects that were necessary.

Question number: A2

Syllabus area: 2.1 2.2 2.5 3.2

Total marks allocated: 25

Examiners' Guidance Notes

Although knowledge of these topics was, as expected, good at this level there were some noticeable concerns revealed in candidates' answers. Specifically use of expressive example code and diagrams was lacking in many cases to demonstrate concepts. Examples may attract more marks than long unwieldy explanations.

Examiner Comments

This question covered a range of diverse topics and because most candidates could answer most of the five parts both the performance and popularity was high.

Question number: A3

Syllabus area: 5.1

Total marks allocated: 25

Examiners' Guidance Notes

Although candidates covered most of the points acceptable for a pass mark, additional and more extensive knowledge was rarely revealed in many candidates answers. Candidates should be mindful of the advanced level of this subject and the need to exhibit a greater depth of knowledge to gain high marks.. The weakest attempts were from candidates who simply repeated the same points they raised in part a) in part b).

Examiner Comments

This question had a similar profile of popularity and performance as Question A2.

Question number: B4

Syllabus area: 3.1,3.2

Total marks allocated: 25

Examiners' Guidance Notes

Overall understanding of graph, hierarchical and object databases is very limited (in the small sample); many answers showed no understanding of graphs as connected objects but rather discussed charts (e.g. bar charts). No candidate made the link to XML/ JSON for hierarchical data and very few candidates managed to outline the similarity and differences between Object databases and RDBMS. The focus of candidates understanding is on traditional RDBMS, but the world is moving into many NoSQL databases — these topics are very hot today.

Examiner Comments

Very few candidates chose to answer this question

Question number: B5

Syllabus area: 1.1,2.3

Total marks allocated: 25

Examiners' Guidance Notes

Part a was generally answered well, with some candidates not realising that the key in part b was the gathering of locks in phase 1 and the releasing of locks in phase 2. Part c was generally answered well, surprisingly even by candidates who could not explain what 2PL is. Parts d and e were again answered well with some candidates struggling to grasp the key behaviour of locks and how they can lead to blocking and possibly even deadlock. Part g was almost always answered correctly. Part f seemed difficult, but on reflection candidates who got this wrong did not read the question well as they discussed the actions as if they were looking at an ongoing transaction awaiting commit, rather than a historic (and completed) transaction — they key was that the effect of this transaction on other subsequent queries managing the same data had to be explored.

Examiner Comments

Answers here were generally good, but often lacked precision (leaving the reader to guess whether the answer is right).