

Examiner Report	
Qualification Name	Higher Education Qualification
Qualification Level	Professional Graduate Diploma
Date/ Series	April 2024
Module	Advanced Database Management Systems
Question no.	comments
A1	<p>Very few candidates attempted this question.</p> <p>The candidate's answers reflected a lack of understanding of database types such as spatial or document oriented.</p>
Question no.	comments
A2	<p>61% of candidates answered this question of which 69% passed.</p> <p>a) and b) The questions explored query performance either by exploring or designing query trees and by exploring some approaches. Candidates were generally clear in designing a query tree for the given question, but sometimes did not capture the detail of the query or introduced optimizations that were not asked for. Answers on various types of indexes and other performance measures were generally correct.</p> <p>c) This final part of the question explored granularity of locking; candidates were generally able to identify the relevant levels of locking but could not always clearly articulate the advantages and usage scenarios for these.</p>
Question no.	comments
A3	<p>50% of candidates answered this question of which 53% passed.</p> <p>a) Candidates could generally provide some insight into the required data warehousing and transaction processing concepts, but the answers were often shallow and not going much beyond paraphrasing the details given in the question.</p> <p>b) The focus of the question was on data cleansing as part of ELT; most answers focused on ELT without much detail on cleansing. It is essential to answer the question 'as asked' and not 'dump' knowledge about the wider area onto paper.</p>

Question no.	comments
B4	<p>This was a very popular question attempted by over 90% of candidates. The overall performance was good with around 60% gaining a pass mark. There were three parts covering different topics.</p> <p>Part a) Most candidates found this part very challenging. Consequently, this part generally produced the low marks. Most candidates lacked sufficient knowledge on cyber security and techniques to counter security breaches. There were three subparts.</p> <p>Subpart i) Many candidates were familiar with SQL injection and produced detailed description of how an SQL injection attack arises. Most candidates were not aware of any of the following attacks such as: Denial of service: Privilege escalation: When a malicious user gains access to parts of the database that they should not have access. Data leakage: this is the unauthorized and malicious transfer of data from within a company to the outside.</p> <p>Subpart ii) Some candidates misunderstood the meaning of “levels” of encryption. Therefore, the levels of encryption were interpreted in different ways, but most candidates could loosely associate encryption at either field/attribute/column level; or whole tables; or entire database. The advantage and disadvantages of each was generally poorly answered by most candidates.</p> <p>Subpart iii) Stored procedures were unfamiliar to many candidates in the context of data security. Example of applying a Stored Procedure to support database security was expected in order to show how it could provide a layer of abstraction between the user and the data.</p> <p>Part b) Covered Distributed Databases and distributed fragmentation in particular. Most candidates found this part very easy and achieved high marks, successfully addressing all the main points required.</p> <p>Part c) This part covered data integrity. Generally, a part that attracted fairly high marks/ A small number of candidates addressed data integrity purely within the context of backup and recovery, access control for example. Data integrity as mentioned on the syllabus ensures validity of relationships between data in the database. The best answers provided examples of data integrity and how data integrity is associated with good database design.</p>

Question no.	comments
B5	<p>This was a very popular question attempted by almost all candidates. The popularity of this question was reflected by an extremely high success rate with around 80% of candidates achieving a pass.</p> <p>This question covered concurrency control and consisted of three parts.</p> <p>Part a) Almost all candidates could put names to the ACID acronym and describe consistency in greater detail. Candidates also seemed to have a good understanding of NoSQL databases and most candidates could explain the consequences of BASE in achieving high availability and throughput with update mechanisms that ensure that all replica of a data item are eventually consistent.</p> <p>Part b) This part had four subparts mainly related to locking and lock protocols. Most candidates scored high marks in this part. It was pleasing to see that a good range of examples were provided to highlight the techniques and practices widely used in concurrency control.</p> <p>Part c) Candidates were required to work out how 2PL (two phase locking) referenced in part a) is applied to a given concurrency problem. Candidates mostly produced two types of responses: either candidates correctly worked out the answer: (C sends Commit to R1 and R2) or did not provide an answer at all. Over a half of all candidates succeeded in providing the correct answer.</p>