Advance Database Management (315324)

MSBTE Diploma · K-Scheme · Model Question Paper — Set C

Time: 3 Hours **Max. Marks: 70**

Instructions:

1. All questions are compulsory.
2. Answer each next main question on a new page.
3. Illustrate your answers with neat sketches wherever necessary.
4. Figures to the right indicate full marks.
5. Assume suitable data, if necessary.
6. Mobile phone, pager and any other electronic communication devices are not permissible in the examination hall.

Q.1 Attempt any FIVE of the following: **10**

a) State any two advantages of concurrency control.

b) State the two phases of the Two-Phase Locking protocol.

c) Define centralized database system. State its two types.

d) Write the syntax for creating a multiset type attribute in SQL with an example.

e) Define document database. Give one example of a document.

f) Define data mining. List any two data-mining techniques.

g) State any two differences between XML and HTML.

Q.2 Attempt any THREE of the following: **12**

a) Explain two-tier and three-tier client-server database models with neat diagrams.

b) Explain any four benefits of a distributed database system.

c) Explain complex data types in object-based databases with a suitable example.

d) Compare SQL and NoSQL databases. (Any four points)

Q.3 Attempt any THREE of the following: **12**

a) Explain the different types of concurrency control protocols.

b) Explain throughput and response time as measures of performance of a parallel database system. A parallel system completes 900 transactions in 3 minutes, and one large query takes 12 s on 1 processor and 4 s on 4 processors. Find the throughput (transactions per second) and the speedup of the query.

c) Write an XQuery using FLWOR expression on *result.xml* (student: roll, name, branch, marks) to display names and marks of students of ‘IF’ branch sorted in descending order of marks, and also the average marks of IF students.

d) Explain virtual warehouse and the functions of data-warehouse tools.

Q.4 Attempt any THREE of the following: **12**

a) Explain transaction processing in a parallel database system.

b) Explain table inheritance in SQL with a suitable example. State the consistency requirements of subtables.

c) Explain arrays and embedded documents in MongoDB with examples.

d) Consider the collection *books* (title, author, category, price, discount). Write MongoDB queries to display: i) books written by 'Korth' or having price less than 300 ii) books whose category is not 'Fiction' or 'Comics' iii) books having no discount field iv) books whose title starts with 'Data'.

e) Compare data mining and data warehousing. (Any four points)

Q.5 Attempt any TWO of the following: **12**

a) Explain the Two-Phase Locking protocol. Show with an example that 2PL does not prevent deadlock.

b) Write XQuery to perform join and nested queries on given XML data of customers and orders.

c) Explain the basic operations performed in the MongoDB shell with syntax and example (create database, insert, find, update, delete, drop).

Q.6 Attempt any TWO of the following: **12**

a) Compare parallel and distributed databases. (Any six points)

b) Explain the decision-tree classifier with a suitable example. How is a classifier validated?

c) Explain XPath and XQuery with suitable examples. Differentiate between them. (Any four points)

Note: This is a **model question paper prepared by Ananda Technologies** only for practice and exam preparation, based on the pattern of previous MSBTE question papers and the K-scheme syllabus. It is **not an official MSBTE paper**, and it does **not** mean that these questions will come in the exam. Answers follow standard textbook points; marks shown are indicative. Free for students — anandatechnologies.in