

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Bachelor of Technology (Computer Engineering) SEMESTER - 5 Winter 2025 (Regular)

Course :Bachelor of Technology (Computer Engineering) Branch : Engineering and Technology

Semester : SEMESTER - 5

Subject Code & Name: BTCOC501 - DATABASE SYSTEMS

Time : 3 Hours]

[Total Marks : 60

Instructions to the Students:

1. Each question carries 12 marks.
 2. Question No. 1 will be compulsory and include objective-type questions.
 3. Candidates are required to attempt any four questions from Question No. 2 to Question No.6
 4. Use of non-programmable scientific calculators is allowed.
 5. Assume suitable data wherever necessary and mention it clearly.
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Q1. Objective type questions. (Compulsory Question)

12

- 1 Which type of Data can be stored in a database?
A) Image Oriented Data B) Text, File containing data
C) Audio, Video data D) All of the Above
- 2 Database languages can be used to _____ the data in the database.
A) Read B) Store C) Update D) All of the mentioned
- 3 A database is with Data Manipulation Languages
A) Accessed and Multiplied B) Added and Manipulated
C) Access and Manipulated D) Added and Multiplied
- 4 The descriptive property possessed by each entity set is _____.
A) Entity B) Attribute C) Relation D) Model
- 5 The ability to query data, as well as insert, delete, and alter tuples, is offered by _____.
A) TCL (Transaction Control Language) B) DCL (Data Control Language)
C) DDL (Data Definition Language) D) DML (Data Manipulation Language)
- 6 What is the relation in RDBMS?
A) Key B) Table C) Row D) Data Type
- 7 Database _____ Which is logical design of the database and the database _____ which is a snapshot of the data in the database at the given instant in time.
A) Instance, Schema B) Relation, Schema C) Relation, Domain D) Schema, Instance
- 8 The intersection operator is used to get the _____ tuples.
A) Different B) Common C) All D) Repeating
- 9 Which of the following makes the transaction permanent in the database?
A) View B) Commit C) Rollback D) Flashback
- 10 The Number of attributes in relation is called its
A) Cardinality B) Degree C) Tuples D) Entity

- 11 What is information about data called?
 A) Hyper Data B) Tera Data C) Meta Data D) Relations
- 12 Which Command is used to remove a relation from SQL?
 A) DROP table B) Delete C) Purge D) Remove

Q2. Solve the following.

- A) Define an Entity and Attribute. Explain the different types of attributes that occur in ER diagram model with an example. 6
- B) Draw any SIX symbols used in the ER diagram. Draw a diagram for the Library Management System. 6

Q3. Solve the following.

- A) Explain the following relational algebra operations with a suitable example: 6
 a) Cartesian Product b) Natural Join
- B) What is relational algebra? Explain basic operations along with the symbols of relational algebra. 6

Q4. Solve Any Two of the following.

- A) Write a SQL query for the following: 6
 a) To create databases, using and showing databases.
 b) To create a book table with bkid, Title, author, Branch, cost, and date of publishing.
 c) Write a query to insert 2 valid rows of values in the BOOK table.
 d) Write a query to list books with a cost of less than 100.
 e) Write a query to list books with title = 'RDBMS'
- B) Explain aggregation with an example. 6
- C) Explain different SQL languages. Explain their purpose with suitable SQL commands. 6

Q5. Solve Any Two of the following.

- A) Explain First, Second, and Third Normal Form with the help of a suitable example. 6
- B) Construct a B+ tree for the given set of key values (2, 3, 5, 7, 11, 17, 19, 23, 29, 31) using four & six pointers that will fit in one node. 6
- C) Explain insertion, deletion, and modification anomalies with suitable examples. 6

Q6. Solve Any Two of the following.

- A) Check whether the given schedule S is conflict serializable and recoverable or not. 6

T1	T2	T3	T4
	R(X)		
		W(X)	
		Commit	
W(X)			
Commit			
	W(Y)		
	R(Z)		
	Commit		
			R(X)
			R(Y)
			Commit

- B) Explain ACID properties in detail. 6
- C) Define serial and non-serial schedules. Explain conflict serializability with a suitable example. 6

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