*Total No. of Questions: 6* *Total No. of Printed Pages:2*

**Enrollment No.....**

# Faculty of Engineering
## End Sem Examination Dec-2023
## CA5CO38 Advanced DBMS

Programme: MCA / BCA-MCA (Integrated) Branch/Specialisation: Computer Application

**Duration: 3 Hrs.** **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1 i. The logical design, and the snapshot of the data at a given instant in time is known as- **1**
(a) Instance & relation (b) Relation & schema
(c) Domain & schema (d) Schema & instance

ii. Which of the following is a top-down approach in which the entity's higher level can be divided into two lower sub-entities? **1**
(a) Specialization (b) Generalization
(c) Aggregation (d) Distribution

iii. A functional dependency is a relationship between or among _____. **1**
(a) Tables (b) Rows (c) Relation (d) Attributes

iv. The fifth Normal form is concerned with- **1**
(a) Transitive dependency (b) Multivalued dependency
(c) Join dependency (d) Domain key

v. Which of the following property of transaction that protect data from the system failure? **1**
(a) Atomicity (b) Consistency
(c) Isolation (d) Durability

vi. Which is the most common method to ensure atomicity and durability of a transaction? **1**
(a) Shadow copy (b) Shadow paging
(c) Precedence graph (d) Deadlock

vii. Storing a separate copy of database in multiple locations is known as- **1**
(a) Vertical partitioning (b) Horizontal partitioning
(c) Data replication (d) Data fragmentation

viii. In a distributed database reduction of redundancy is obtained by- **1**
(a) Data sharing (b) Data compaction
(c) Data replication (d) Data fragmentation





ix. Which type of database is used to store geographic locations - **1**
(a) Temporal database (b) Spatial database
(c) Mobile database (d) Multimedia database

x. Which of the following is an unordered collection of elements that may contain duplicates? **1**
(a) Set (b) Bag (c) List (d) Dictionary

Q.2 i. Define data independence. **2**

ii. Differentiate between file system and dbms. **3**

iii. What is attribute? Explain different types of attributes with example. **5**

OR iv. Explain specialization and generalization with suitable diagram. **5**

Q.3 i. Write the purpose of normalization. **2**

ii. What is functional dependency? Describe various types of functional dependencies with example. **8**

OR iii. Explain various types of normal forms with example. **8**

Q.4 i. What are the ACID properties of transaction? **3**

ii. What is serializability? Explain following transaction is conflict serializable or not. If it is yes then find the serializability order? **7**

| T1 | T2 | T3 |
|---|---|---|
| R(X) | | |
| | | R(Y) |
| | | R(X) |
| | R(Y) | |
| | R(Z) | |
| | | W(Y) |
| | W(Z) | |
| R(Z) | | |
| W(X) | | |
| W(Z) | | |

OR iii. Explain deferred database modification and immediate database modification recovery techniques. **7**

Q.5 i. Describe architectures for parallel databases. **4**

ii. Explain different types of distributed database with example. **6**

OR iii. Write a note on replication and fragmentation. **6**

Q.6 Attempt any two:

i. Compare RDBMS with OODBMS and ORDBMS. **5**

ii. Write a note on spatial database and multimedia database. **5**

iii. Design a database with constraints for online shopping. **5**

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# Marking Scheme

## CA5CO38 (T)- Advanced DBMS (T)

| | | | | |
|---|---|---|---|---|
| Q.1 | i) | d) Schema & Instance | | **1** |
| | ii) | a) Specialization | | **1** |
| | iii) | d) Attributes | | **1** |
| | iv) | c) Join Dependency | | **1** |
| | v) | d) Durability | | **1** |
| | vi) | a) Shadow Copy | | **1** |
| | vii) | c) Data Replication | | **1** |
| | viii) | a) Data Sharing | | **1** |
| | ix) | b) Spatial Database | | **1** |
| | x) | b) Bag | | **1** |
| Q.2 | i. | Definition | 2 Marks | **2** |
| | ii. | three differences | 3 Marks | **3** |
| | iii. | for definition | 2 Marks | **5** |
| | | types of attributes | 3 Marks | |
| OR | iv. | Description | 3 Marks | **5** |
| | | Diagram | 2 Marks | |
| Q.3 | i. | for purpose | 2 Marks | **2** |
| | ii. | Definition | 2 Marks | **8** |
| | | Types of functional dependencies | 3 Marks | |
| | | Examples | 3 Marks | |
| OR | iii. | for type | 5 Marks | **8** |
| | | for examples | 3 Marks | |
| Q.4 | i. | for all four properties | 3 Marks | **3** |
| | ii. | for definition, | 2 Marks | **7** |
| | | for finding conflict schedule | 3Marks for finding serializability order 2 Marks | |
| OR | iii. | for deferred data modification | 3.5 Marks | **7** |
| | | for immediate data modification. | 3.5 Marks | |
| Q.5 | i. | for different architecture | 4 Marks | **4** |
| | ii. | for types and | 4 Marks | **6** |
| | | for example | 2 Marks | |
| OR | iii. | for fragmentation | 3 Marks | **6** |
| | | for replication | 3 Marks | |
| Q.6 | | Attempt any two: | | |
| | i. | five comparison point | 5 Marks | **5** |
| | ii. | for spatial database and | 2.5 Marks | **5** |
| | | for multimedia database | 2.5 Marks | |
| | iii. | for database design with constraints? | 5 Marks | **5** |

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