

- (c) Attributes
- (d) Tables
- 1-d. In conflict serializability_____ (CO4) 1
- (a) order of operations does not matter
- (b) order of operations matter
- (c) a conflict should be there
- (d) None of the above
- 1-e. Which of the following cannot be used to implement a timestamp ? (CO5) 1
- (a) System clock
- (b) Logical counter
- (c) External time counter
- (d) None of the mentioned

2. Attempt all parts:-

- 2.a. Who is a DBA? What are the responsibilities of a DBA? (CO1) 2
- 2.b. What is a "key" in the Relational Model? (CO2) 2
- 2.c. Define Functional Dependency with an example. (CO3) 2
- 2.d. Define Concurrent transactions. (CO4) 2
- 2.e. List the Concurrency Control techniques. (CO5) 2

SECTION B

15

3. Answer any three of the following:-

- 3-a. Explain the total and partial constraints with the help of an example. (CO1) 5
- 3-b. Differentiate between DDL and DML commands in SQL. (CO2) 5
- 3-c. Explain all the types of anomalies which can arise in a database.(CO3) 5
- 3-d. How can we test whether a schedule is serializable or not? (CO4) 5
- 3.e. Describe major problems associated with concurrent processing. What is the role of locks in avoiding these problems ? (CO5) 5

SECTION C

30

4. Answer any one of the following:-

- 4-a. Explain different types of attributes in DBMS with suitable examples? (CO1) 6
- 4-b. What is SQL? Explain the various features of SQL. (CO1) 6

5. Answer any one of the following:-

- 5-a. What are Subqueries? Why do we need them? Explain with the help of an 6

example. (CO2)

5-b. Explain Self Joins with the help of an example. (CO2) 6

6. Answer any one of the following:-

6-a. What is a log File. Write the steps in Log based recovery with a suitable example. (CO3) 6

6-b. Differentiate between centralized and distributed databases. (CO3) 6

7. Answer any one of the following:-

7-a. Discuss various methods of recovery from failure in distributed systems. (CO4) 6

7-b. Why should serialization be achieved? What is the significance of this ? Does conflict serialization and view serialization have equal importance? (CO4) 6

8. Answer any one of the following:-

8-a. Explain the features of NoSQL. How is it different from SQL? (CO5) 6

8-b. Differentiate between Timestamp based protocol and Validation based Protocol. Which one is better and why? (CO5) 6

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