

Note : Answer any five

Assume suitable missing data, if any.

- Q1. (a) What is the difference between security and Integrity? 2
(b) What is a heap file and how the pages are arranged in a heap file? 2
(c) Construct an ER diagram to model online book store. Map/con relational model. 2
- Q2 (a) Discuss how schema refinement through dependency analysis and normalization can improve schemes obtained through ER design. 5
(b) What is nested SQL? What are the advantages of nested SQL programs? Give example. 5
(c) When the two schedules are conflict equivalent? Explain. 2
- Q3. (a) Explain various recovery techniques during transaction in detail. 9
(b) Which locking protocols ensure freedom from deadlock and cascades rollback and how? explain. 5
- Q4. (a) What is concurrent control? How is it implemented in DBMS? Explain. 6
(b) What is DBMS? Explain the architecture of DBMS. 5
(c) What are the characteristics of DBMS? 3
- Q5. (a) Explain different index schemes used in the database system. 6
(b) Consider the Universal relation $R(A,B,C,D,E,F,G,H,I,J)$ and set of FD's $G = (\{A,B\} \rightarrow \{C\}, \{B,D\} \rightarrow \{E,F\}, \{A,D\} \rightarrow \{G,H\}, \{A\} \rightarrow \{I\}, \{H\} \rightarrow \{J\})$

What is the key of R? Decompose R into 2NF, then 3NF relations.

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Q6 ~~6~~ What is the difference between Trigger and Assertion? Give examples. 4

(b) Consider the following relations :

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Customer (Cust_No, Sales_Person_no, City)

Sales_Person(Sales_person_no, Sales_Person_Name, Common_Prec,
Year_of_Hire)

Write SQL

- (i) Display the list of all customers by Cust_No with the city in which each is located.
- (ii) List the names of the sales persons who have accounts in Delhi
- (c) Explain DDL and DML.

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7. Write Short Notes (any four) ✓

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Relational Algebra

~~Serializability~~

~~B+ Index file~~

(d) File organization

(e) Multiple Granularity