

B033412(033)

**B. Tech. (Fourth Semester) Examination,
April-May 2021**

(Information Technology Branch)

DATABASE MANAGEMENT SYSTEM

Time Allowed : Three hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt all questions. Part (a) from each question is compulsory. Attempt any two parts from part (b), (c) and (d) of each question.

Unit-I

1. (a) Define the term :

4

(i) Generalization

(ii) Specialization

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(iii) Aggregation

- (b) What is DBMS? Discuss the levels of architecture in DBMS. 8
- (c) Draw a detail ER Diagram of University Database contains information about professors and courses assumes at necessary constraints. 8
- (d) What is Key? Why we need a key? Describe various types of keys with example. 8

Unit-II

2. (a) Define trigger with example. 4
- (b) What is SQL? Explain different types of SQL commands with example. 8
- (c) Consider the following relational database schema consisting of the four relation schemas : 8
- passenger (pid, pname, pgender, pcity)
- agency (aid, aname, acity)
- flight (fid, fdate, time, src, dest)
- booking (pid, aid, fid, fdate)

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Answer the following question using relational algebra queries :

- (i) Get the complete details of all flights to New Delhi
- (ii) Get the details about all flights from Chennai to New Delhi.
- (iii) Find only the flight numbers for passenger with pid 123 for flights to Chennai before 06.11.2020.
- (iv) Find the passenger names for passengers who have bookings on at least one flight.
- (v) Find the passenger names for those who do not have any bookings in any flights.
- (vi) Find the agency names for agencies that located in the same city as passenger with passenger id 123.
- (d) What is Join? Explain various types of SQL Joins with example. 8

Unit-III

3. (a) What is loss less join decomposition? 4

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- (b) Define functional dependency. Explain the various types of functional dependency. 8
- (c) Explain the following with examples : 8
- (i) Second Normal Form
 - (ii) Three Normal Form
 - (iii) BCNF
- (d) What is Normalization? What are the problems without Normalization? Explain the different kinds of anomalies in DBMS. 8

Unit-IV

4. (a) Explain ACID properties of transaction. 4
- (b) What is Transaction? Why do you need concurrency in Transactions? Explain with the help of a diagram the various states of transaction. 8
- (c) Define Serializability and its types also explain view serializability in detail. 8
- (d) List the various types of transaction failure. Explain Log Based Recovery with help of example. 8

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Unit-V

5. (a) Define Concurrency Control. 4
- (b) Write short notes on the following : 8
- (i) ISAM
 - (ii) Multiple Granularity
- (c) What is objective of File Organization? What are various File Organization Techniques? 8
- (d) Explain Hash Based Indexing and Tree Based Indexing. 8