

BT-4/M-21

44185

DATA BASE MANAGEMENT SYSTEM

Paper-PC-IT-210A

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each unit. All questions carry equal marks.

UNIT-I

1. (a) What are the different types of Database Users? Discuss. Explain the responsibilities of Database Administrator (DBA).
- (b) What is role of mapping in three-tier architecture of Data Base Management System (DBMS)? Discuss Data Independence. (8+7=15)
2. Write note on the following :
 - (a) Composite Key and Unique Key.
 - (b) Single valued and Multivalued attributes.
 - (c) Integrity Rule-1 and Integrity Rule-II.
 - (d) Specialization and Generalization.

(3+4+4+4=15)

UNIT-II

3. (a) Consider following schema and write SQL for given statements.

Student(Rollno,Name,Age,Sex,City) Student_marks
(Rollno,Sub1,Sub2,Sub3,Total,Average).

Write query to

- (i) Calculate and store total and average marks from Sub1, Sub2 & Sub3.
 - (ii) Display name of students who got more than 60 marks in subject Sub1.
 - (iii) Display name of students with their total and average marks.
 - (iv) Display name of students who got equal marks in subject Sub2.
- (b) What are Views? Write the syntax to create, delete and modify view. (8+7=15)
4. (a) What is the difference between tuple relational calculus and domain relational calculus?
- (b) What is the need of relational algebra? Explain set oriented operation with their meaning, syntax and example. (8+7=15)

UNIT-III

5. (a) Given relation R with attributes A, B, C, D, E, F and set of FDs as $A \rightarrow BC$, $E \rightarrow CF$, $B \rightarrow E$ and $CD \rightarrow EF$. Find out closure $\{A, B\}^+$ of the set of attributes,

(b) Differentiate between Full and Partial Functional Dependency & Multivalued and Join Functional Dependency. (8+7=15)

6. Why normalization is needed? Discuss Second Normal Form (2NF) and Fifth Normal Form (5NF) with suitable example. 15

UNIT-IV

7. (a) What is concurrency? Briefly explain the methods to control concurrency.

(b) Explain conflict serializability and view serializability. (8+7=15)

8. (a) Explain log-based recovery and shadow paging technique.

(b) What is deadlock? Explain three types of actions to be taken for recovery from deadlock. (8+7=15)
