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BT-4/M-22 **44219**

DATA BASE MANAGEMENT SYSTEMS

Paper – PC-CS-AIDS-210A/PC-CS-CYS-206A/
PC-CS-A/M/-206A

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. Describe the main characteristics of the database approach and discuss how it differs from traditional file systems. Also sketch the three-Schema architecture of the DBMS and explain.

2. Answer the following questions in brief :
   (a) What are the responsibilities of a DBA?
   (b) Explain the basic E-R model concepts of entities and their attributes with the help of an example.
   (c) What additional modelling concepts are included in the EER model apart from the ones that already exist in the ER model?

UNIT–II

3. (a) Define relation, tuples, attributes and domain in the context of Relational Data base management system.
   (b) Describe the PROJECT and JOIN operations of Relational Algebra with example.

4. Answer the following questions in brief :
   (a) Describe Referential Integrity constraints using an appropriate example.
   (b) Give an example of a query in SQL.
   (c) How is a view described in SQL?

UNIT–III

5. Discuss insertion, deletion and modification anomalies and describe the normalization process up to third normal form and also including Boyce-codd normal form. Highlight the concept of functional dependency and transitive dependency wherever applicable in the normalization process.

6. (a) What is multi-valued dependency and how is it related to fourth normal form (4NF)?
   (b) Define join dependencies and fifth normal form. Why is 5NF also called project-join normal form (PJNF)?

UNIT–IV

7. (a) Describe the properties of transactions that are used to maintain consistency in a database, before and after the transaction.

(b) Why and how is the concept of serializability of schedules used?

8. Answer any *two* of the following :

(a) Distinguish between binary locks and two phase locking.

(b) Discuss the time stamp ordering protocol for concurrency control.

(c) What is a deadlock? How can it be resolved?
