



(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID : 110406**

Roll No.

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## B. Tech.

(SEM. IV) THEORY EXAMINATION, 2014-15  
**DATABASE MANAGEMENT SYSTEMS**

Time : 3 Hours]

[Total Marks : 100

Note: 1. Attempt all question.

2. All question carry equal marks.

- 1 Attempt any FOUR questions. 5×4=20
- a. Explain the differences between Database Management System and File System.
  - b. Draw the overall structure of DBMS and explain its various components.
  - c. What is data abstraction? Explain different levels of abstraction.
  - d. Explain constraints and its types.
  - e. What are data models? Briefly explain different types of data models.
  - f. Who are data administrators? What are the functions of database administrator?

- 2 Attempt any FOUR questions" 5×4=20
- a. Explain Generalization, Specialization and Aggregation.
  - b. What are the design issues of Entity- Relationship diagram?
  - c. What is Unified Modeling Language? Explain different types of UML.
  - d. Construct an E-R diagram for a hospital with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests and examinations conducted.
  - e. Discuss the candidate key, primary key, super key, composite key and alternate key.
  - f. Define join. Explain different types of joins.
- 3 Attempt any TWO questions 10×2=20
- a. Explain Tuple Relational Calculus and Domain Relational Calculus ,
  - b. Explain various characteristics of SQL? Discuss five aggregate functions with suitable example.
  - c. What is functional dependency? Explain trivial and non-trivial functional dependency. Define canonical cover. Compute canonical cover for the following:  
 $R = (A, B, C) \quad F = \{A \rightarrow BC, B \rightarrow C, A \rightarrow B, AB \rightarrow C\}$
- 4 Attempt any TWO questions 10×2=20
- a. What do you mean by Normalization? Explain BCNF and 3NF with a suitable example.
  - b. What do you mean by Locking techniques of concurrency control? Discuss the various locking techniques and recovery with concurrent transaction also in detail.

- c. Explain time based protocol and validation based protocol with example.
- 5 Attempt any TWO question. 10×2=20
- a. What is serializability? Explain view serializability and conflict serializability.
- b. List the ACID properties. Explain the usefulness of each property.
- c. What is dead lock ? How it can be detected and avoided ?
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