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ECS402

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

PAPER ID : **110406**

Roll No.

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) 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 ?
