Question Paper Code : 40901

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

Third/Fifth/Eighth Semester

Computer Science and Engineering

CS 6302 – DATABASE MANAGEMENT SYSTEMS

(Common to : Mechanical and Automation Engineering/Mechatronics Engineering/Information Technology)

(Regulations 2013)

Time : Three Hours   Maximum : 100 Marks

Answer ALL questions

PART – A   (10×2=20 Marks)

1. What is a weak entity ? Give example.

2. Define a foreign key. Give example.

3. What is data definition language ? Give example.

4. Outline the steps involved in query processing.

5. What is serializability ?

6. State the difference between a shared lock and an exclusive lock.

7. What is a hash function? Give example.

8. Define data mining.

9. What is a distributed database management system ?

10. State the difference between classification and clustering.

PART – B   (5×13=65 Marks)

11. a) Explain the select, project, Cartesian product and join operations in relational algebra with an example.   (13)

(OR)

b) What is database normalization ? Explain first normal form, second normal form and third normal form with an example.   (13)

12. a) Explain the aggregate functions in SQL with an example.   (13)

(OR)

b) What is query optimization ? Outline the steps in query optimization.   (13)

13. a) i) During execution, a transaction passes through several states, until it finally commits or aborts. List all possible sequences of states through which a transaction may pass. Explain why each state transition may occur ?   (6)

ii) Explain with an example the properties that must be satisfied by a transaction.   (7)

(OR)

b) i) What is concurrency control ? Explain the two phase locking protocol with an example.   (7)

ii) Explain conflict serializability and view serializability.   (6)

14. a) What is hashing ? Explain static hashing and dynamic hashing with an example.   (13)

(OR)

b) Outline the features of the following databases :

i) Parallel databases.   (7)

ii) Multimedia databases.   (6)

15. a) i) Present an overview of database security.   (8)

ii) Explain with diagrammatic illustration the architecture of a distributed database management system.   (5)

(OR)

b) Explain the necessary characteristics a system must satisfy to be considered as an object oriented database management system.   (13)

PART – C   (1×15=15 Marks)

16. a) Consider the following scenario :

A university registrar's office maintains data about the following entities : (a) courses, including number, title, credits, syllabus and prerequisites (b) course offerings, including course number, year, semester, section number, instructor, timings and classroom (c) students, including student-id, name, and program and (d) instructors, including identification number, name, department and title. Further, the enrollment of students in courses and grades awarded to students in each course they are enrolled for must be appropriately modeled.

i) Model an entity relationship diagram for the above scenario.   (6)

ii) Map the entity relationship diagram you have modeled to relations.   (9)

(OR)

b) Apply the Apriori algorithm for discovering frequent item sets to the following data set :

Trans ID	Items Purchased
101	Mulberry, Raspberry, Cherry
102	Mulberry, Papaya
103	Papaya, Mango
104	Mulberry, Raspberry, Cherry
105	Passion Fruit, Cherry
106	Passion Fruit
107	Passion Fruit, Papaya
108	Mulberry, Raspberry, Guava, Cherry
109	Guava, Mango
110	Mulberry, Raspberry

Use 0.3 for the minimum support value.   (15)