

Total No. of Questions :10]

SEAT No. :

**P2906**

[Total No. of Pages :4

[4958] - 1101

**T.E. (IT)**

**DATABASE MANAGEMENT SYSTEMS**

**(Semester - I) (2012 Course) (314443)**

*Time : 2½ Hours]*

*[Max. Marks :70*

*Instructions to the candidates:*

- 1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Assume Suitable data if necessary.*

**Q1) a)** Compare DBMS and file processing system with following points [3]

- i) Redundancy
- ii) Access Control
- iii) Data Integrity

**b)** Consider the following relations: [3]

BRANCH(bno, street, area, city, pcode, telno)

STAFF(Sno, Fname, Lname, address, position, salary, bno)

Express the following queries in SQL:

- i) List the staff who work in the branch at 'Main Street'
- ii) Find staff whose salary is larger than the salary of every member of staff at branch 'S1'.

**c)** For a given functional dependencies F, find primary key? [4]

$A \rightarrow BCD, AE \rightarrow F, E \rightarrow G, D \rightarrow H, FE \rightarrow I$

OR

**P.T.O.**

**Q2) a)** Following information is maintained for online bookstore. **[6]**

- i) books (ISBN, title, price, year)
- ii) author (name, address, URL)
- iii) publisher (name, address, phone, URL)
- iv) customer (name, address, email, phone) (name is discriminating attribute)
- v) Shoppingbasket (basketID)

Construct an ER diagram with following constraint

Each book should have a author and a publisher. Book may have more than one author. Each Customer have a dedicated shopping basket. Books can further be categorized as books, music cassette, or compact disks.

b) Write an algorithm to find cycle in a precedence graph. **[4]**

**Q3) a)** List down all the possible crash recovery methods? Explain any one with proper example? **[5]**

b) Consider the following relations **[5]**

PLAYER (PID#, Name)

MATCH (MID#, PID#, Match\_date, opponent)

- i) Write a simple inner join query using SQL to display information about the player and match played by the player.
- ii) Show intermediate steps of inner join with proper example (assume suitable data).

OR

- Q4)** a) Discuss the MongoDB aggregation framework with suitable example?[6]  
b) What do you mean by cascadeless schedule? Explain with suitable example. [4]

- Q5)** a) For each of the three partitioning techniques, namely round robin, hash, range partitioning, give an example of a query for which that partitioning would provide the faster response. [6]  
b) Compare [6]  
i) Speedup and scaleup  
ii) Horizontal and Vertical Fragmentation.  
c) Why it is necessary to have a client server architecture for database management system. [6]

OR

- Q6)** a) Write short note on (any two) [12]  
i) Transaction Server Process Structure.  
ii) Data fragmentation in distributed databases.  
iii) Interoperation parallelism.  
b) Discuss the relative advantages of centralized and distributed databases.[6]

- Q7)** a) Give the DTD for an XML representation of the following nested relational schema [7]  
Emp = (ename, ChildrenSet Setof(Children), SkillsSet Setof(Skills))  
Children=(name, Birthday)  
Birthday = (day, month, year)  
Skills=(type, ExamSet Setof(Exams))  
Exam=(year, city)  
Use the DTD and write the following queries in XQueries format  
Find the names of all employees who have a child who has a birthday in March.  
b) Discuss with examples JSON data types. [4]  
c) What is HDFS? Explain in detail. [5]

OR

**Q8)** a) What is XML Schema? Advantages of XML Schema over DTD? Give simple example of XML Schema? [7]

b) Discuss Hbase Data Model. [5]

c) Compare JSON and XML with example. [4]

**Q9)** a) Draw and explain various components of data warehouse and its Characteristics. [8]

b) Explain Knowledge discovery process in detail. [8]

OR

**Q10)**a) Write short note on [8]

Hadoop MapReduce.

Data warehouse Schemas

b) Why there is need for Mobile database? Draw and explain the architecture of mobile database. [8]

