Total No. of Questions :10]

SEAT No. :

P2906

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[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 XQuries 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 MadReduce.

Data warehouse Schemas

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