

Total No. of Questions :10]

SEAT No. :

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P1761

[5058] - 401

T.E. (IT)

DATABASE MANAGEMENT SYSTEMS

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

Time : 2½ Hours]

[Max. Marks :70

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10.
- 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]

- 1) Redundancy
- 2) Access Control
- 3) 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:

- 1) List the staff who work in the branch at 'Main Street'
- 2) 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) Followig 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) Shopping basket(basketID)

Construct an ER diagram with following constraint Each book should have an author and a publisher. Book may have more than one author. Each Customer have a dedicated shopping basket. Books can further be catagorized 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? Role of it in Hadoop system? [5]

OR

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

b) What is Hbase? Discuss various Hbase Data Model and applications.[5]

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

Q9) a) What is OLTP and OLAP? How datawarehouse is prepared to support OLAP system? [8]

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

OR

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

i) Hadoop MaReduce.

ii) Schemas in Dataware house

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

