

Total No. of Questions :10]

SEAT No. :

**P3541**

**[5560]-193**

[Total No. of Pages : 3

**T.E. (Information Technology)**  
**DATABASE MANAGEMENT SYSTEMS**  
**(2012 Course) (Semester - I)**

*Time : 2 ½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Answers Q 1 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) *Use of calculator is allowed*
- 5) *Assume suitable data if necessary*

- Q1) a)** Explain Different types of attributes with suitable example and notation **[3]**
- b) When the database is said to be in 3NF? **[3]**
- c) A database is being constructed to keep track of the teams and games of a sports league. A team has number of players, not all of whom participate in each game. It is desired to keep track of the players participating in each game for each team, the positions they played in that game, and the result of the game. Design an ER schema diagram for this application, stating any assumptions you make. Choose your favorite sport (e.g. soccer, baseball, football). **[4]**

OR

- Q2) a)** Explain two types of Log Based Protocol. **[6]**
- b) What is Embedded SQL? **[2]**
- c) Explain Lock-compatibility Matrix **[2]**
- Q3) a)** Consider the relational database given below : **[5]**
- employee (emp\_name, street, city)
- works (emp\_name, company\_name, salary)
- company (company\_name, city)
- manager (emp\_name, manager\_name)

**P.T.O.**

Write a query for each of the following :

- i) Find the emp\_name, street and cities of residence of employees whose salary exists in between 10000 and 20000 and work for ABC Ltd.
  - ii) Find the name, street and cities of employees who live in the same city as the company they work for.
  - iii) Find all employees in the database who earn more than each employee of Central Bank.
  - iv) Find the company that has the most employees.
  - v) Find all employees who live in the same city and on the same street as do the manager.
- b) Explain the concept of Conflict and View Serializability with proper example. [5]

OR

- Q4)** a) Explain DBMS System Architecture. [5]
- b) Explain the need of concurrency control in transaction management. [5]
- Q5)** a) What are the advantages and disadvantages of Distributed Database System? [4]
- b) Define following terms : [6]
- i) Throughput
  - ii) Response time
  - iii) Speed-up
- c) Explain 2-tier and 3-tier Architecture of databases. [8]

OR

- Q6)** a) Differentiate between client-server and centralized architecture. [6]
- b) Explain Shared nothing and Shared memory parallel database architectures. [6]
- c) Explain sharding in Mongo DB [6]

- Q7)** a) Explain working of different nodes in HDFS. [6]  
b) Explain HBase architecture. [5]  
c) What is XML DTD? Explain with example. [5]

OR

- Q8)** a) Explain X Query and X Path. [6]  
b) Explain how JSON Object and Array are created? [6]  
c) Enlist similarities and differences between XML and JSON. [4]

- Q9)** a) Explain main components of “Data Warehouse”. [8]  
b) Define data mining. Explain data mining tasks with suitable example. [8]

OR

- Q10)** a) Explain the concept of mobile databases. [8]  
b) Explain how to deal with massive datasets using map-reduce and hadoop. [8]

