

Q.P. Code: 24228

(3 Hours)

[Total Marks 80 ]

- i. **Q. 1. is Compulsory.**
  - ii. **Attempt any three from the remaining.**
  - iii. **Assume suitable data.**
- Q. 1**
- (a) What are the characteristics of a Distributed DBMS? (5)
  - (b) What are the benefits of Data Fragmentation in Distributed Database Design? (5)
  - (c) Explain Client server distributed database systems. (5)
  - (d) How is XML useful for data integration? (5)
- Q. 2**
- (a) Describe a simple model for distributed transaction management. (10)
  - (b) Discuss Transparencies in Distributed Database Design. (10)
- Q. 3**
- (a) Explain the different phases of Three-Phase Commit Protocol. (10)
  - (b) Illustrate how a distributed database handles query processing. (10)
- Q. 4** Consider a train reservation system. Some information to be stored is given below. (assume any extra information required) (20)
1. Train information: train id, start station destination station, total number of seats, number of seats reserved, and price of tickets.
  2. Passenger information: passenger-id, name, address, phone number.
  3. Reservation information: passenger-id, train id, date of travel, seat number.
- Design a distributed database solution for three booking stations across the country.  
The Design should include the definition of global schema and fragmentation schema.
- Q. 5**
- (a) What are heterogeneous distributed databases? What are the design issues in such databases? (10)
  - (b) Give the DTD or XML schema for an xml representation of the following nested-relational schema: (05)  
**Emp** = ( ename, ChildrenSet setof(Children), SkillSet setof(Skills))  
**Children** = (name, Birthday) Birthday = (day, month, year)  
**Skills** = (type, ExamsSet setof(Exams) ) Exams = (year, city).
  - (c) Write a XPath query on the schema of (Q5 b) to list all skill types in Emp. (05)
- Q. 6**
- (a) Write a note on Reference Architecture of Distributed DBMS. (10)
  - (b) Write a note on Concurrency Control in a Distributed Database System. (10)