

Total No. of Questions : 10]

SEAT No. :

**P2888**

**[4958]-1081**

[Total No. of Pages : 4

**T.E. (Computer Engg.)**

**DATABASE MANAGEMENT SYSTEMS APPLICATIONS**

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

*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 indicate full marks.*
- 4) *Assume suitable data, if necessary.*

**Q1) a)** Construct an E-R diagram for a car-insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents. **[5]**

b) Consider relational schema **[5]**

Customer (cname, ccity, phone)

Loan (lno, branch\_name, amount)

Borrower(cname, lno)

Depositor(cname, accno)

Branch(bname, bcity)

Account(bname, accno, bal)

Write SQL queries for following requirements: (Any two)

- i) Find the names of customers whose city name includes 'bad'.
- ii) Find all customers who have an account but no loan in the bank.
- iii) Find out average account balance at each branch.

OR

**P.T.O.**

- Q2)** a) Explain document based data model of NOSQL database. [5]
- b) Define Database normalization. Explain any two normal forms with suitable example. [5]

- Q3)** a) Consider following structure for MongoDB collection and write a query for following requirements in MongoDB (any 2) [5]

Teachers(Tname, dno, experience, salary, date\_of\_joining)

Department(Dno, Dname)

Students(Sname, roll\_no, class)

- i) Write a query to create above collection & for insertion of some sample documents.
- ii) Find the information about all teachers of dno = 2 and having salary greater than or equal to 10,000/-
- iii) Find the student information having roll\_no=2 or Sname = xyz .
- b) What is serializable schedule? Explain conflict & view serializable schedule. [5]

OR

- Q4)** a) Explain BASE Properties of NOSQL database with suitable example. [5]
- b) Explain in brief two phase locking protocol. [5]

- Q5)** a) Explain parallel database architectures. Explain Speed up and scale up factors in parallel database. [8]
- b) Explain 3-tier web architecture with diagram for on line shopping database system. [8]

OR

**Q6) a)** Explain distributed database architecture. Also explain homogeneous and heterogeneous distributed databases. [8]

b) Explain cassandra database system. [8]

**Q7) a)** <! DOCTYPE db [ [7]

<! ELEMENT emp (ename, children\*, skills\*)>

<!ELEMENT children (name, birthday)>

<!ELEMENT birthday (day,month, year)>

<!ELEMENT skills (type, exams+)>

<!ELEMENT exams (year, city)>

<!ELEMENT ename (# PCDATA)>

<!ELEMENT name (# PCDATA)>

<!ELEMENT day (# PCDATA)>

<!ELEMENT month (# PCDATA)>

<!ELEMENT year (# PCDATA)>

<!ELEMENT type (# PCDATA)>

<!ELEMENT city (# PCDATA)>

] >

Write the following queries in XQuery, assuming the DTD given above (any 2)

i) Find the names of all employees who have a child who has a birthday in March.

ii) Find those employees who took an examination for the skill type “typing” in the city “Pune”.

iii) List all skill types in Emp.

- b) Write short note on [10]
- i) JSON
  - ii) Hive

OR

- Q8)** a) Explain different components of HADOOP in detail. [7]
- b) Explain Xpath & Xquery with suitable example. [5]
- c) Write short note on R programming. [5]

- Q9)** a) Compare operational systems and data warehouse. [5]
- b) Write short note on Data-mining clustering. [5]
- c) Explain supervised & unsupervised machine learning algorithms. [7]

OR

- Q10)**a) Explain Extract - Transform - Load (ETL) process in data warehouse. [5]
- b) Explain in brief different BIS components. [5]
- c) Write short note on Data-mining classification. [7]

