Total No. of Questions : 10]

SEAT No. :

P2888

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[4958]-1081

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) **[7]**

```
<! DOCTYPE db [
<! 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]**