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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]

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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.

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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]

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