Total No. of Questions : 10]

SEAT No. :

P3157

[Total No. of Pages : 3

[4858] - 1081

T.E. (Computer Engineering) (Semester - I)

Database Management Systems Applications

(2012 Pattern) (End Semester)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8. Q.9 or Q.10.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) a) Construct an E-R diagram for a Banking Database System. Consider various entities such as Account, Customer, Branch, Loan, Deposit, Borrower etc. Design Specialization and Generalization EER features. **[5]**

b) List significant differences between a file-processing system and a DBMS. **[5]**

OR

Q2) a) Define Normalization. Explain 2ND Normal Form with suitable example. **[5]**

b) Consider Following Relational Tables: **[5]**

person(pname, street, city)

works_for(pname, cname, salary)

company(cname, city)

manages(pname, mname)

Solve following quries using SQL

i) Find the street and city of all employees who work for the Appolo, live in Pune, and earn more than Rs. 50,000.

ii) Create a view consisting of the manager name and the average salary of all employees who work for that manager.

P.T.O.

Q3) a) Explain the need for concurrency control in transaction management. **[5]**

b) Design following queries using MongoDB **[5]**

i) Create a collection called 'games'.

ii) Add 5 games to the database. Give each document the following properties: {name, gametype, rating (out of 100)}.

iii) Write a query that returns all the games.

iv) Write a query that returns the 3 highest rated games.

v) Update your two favorite games to add two achievements called 'Game Master' and 'Speed Demon'.

OR

Q4) Write a short note on (Any Two): **[10]**

a) Map Reduce Function.

b) Log based Recovery.

c) CAP and BASE theorem.

Q5) a) Explain Client Server Architecture with suitable database application. **[5]**

b) Define Distributed Database. Explain advantages and disadvantages of Distributed Databases. **[5]**

c) Explain Two Phase Commit Protocol in Distributed Databases. How 3 PC is different than 2PC. **[7]**

OR

Q6) a) Explain Transaction Servers and Data Servers. **[5]**

b) Describe Sharding in MongoDB. **[5]**

c) Explain Shared Nothing and Shared Memory Parallel Database system architectures. **[7]**

Q7) a) What is JSON? Explain JSON schema with example. **[5]**

b) What is Hadoop? Explain Components of Hadoop. **[5]**

c) Explain DTD and XML schemas with suitable example. **[7]**

OR

Q8) a) Explain is HIVE Database and HIVE Query Language in detail. **[5]**

b) Write a short note on R Programming. **[5]**

c) Explain Xquery and FLWOR Expressions with suitable example. **[7]**

Q9) a) What is BIS? Explain Components of BIS. **[5]**

b) Compare OLTP vs OLAP. **[5]**

c) Define Data Mining. Explain various Data Mining tasks with suitable example. **[6]**

OR

Q10) a) Explain Recommendation System with suitable example. **[5]**

b) Explain Regression with example. **[5]**

c) Explain k-means clustering algorithm with suitable example. **[6]**

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