Total No. of Questions : 10]

SEAT No. :

P3318

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T.E. (Information Technology) (Semester - I)

DATABASE MANAGEMENT SYSTEMS

(2012 Pattern)

Time : 2½Hours] *[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) ***Use of calculator is allowed.***
5) ***Assume suitable data if necessary.***

Q1) a) Differentiate between logical and physical independency with suitable example. **[3]**

b) What is referential integrity? **[2]**

c) Relation R has eight attributes ABCDEFGH. Fields of R contain only atomic values. **[5]**

F={CH→G, A→BC, B→CFH, E→A, F→EG} is a set of functional dependencies (FDs) so that F + is exactly the set of FDs that hold for R. How many candidate keys does the relation R have?

OR

Q2) a) Draw an ER Diagram for wholesale dealers for audio, video consumer equipment from different manufacturing (BRAND), Customers are the various retail outlets(RETAILERS), wholesalers extends credit to OLD customers and special discounts are offered to NEW customers(retailers), ER Scope is restricted to details (queries on) of customers (retailers), products, stocks, and their discounts, credit offers etc. **[6]**

P.T.O

b) Consider the following database

Student (RollNo, Name, Address)

Subject (Sub_code, Sub_name)

Marks (Roll_no, Sub_code, Marks)

Write following queries in SQLusing two possible way (possible ways are Join, Nested quires, views)

Find average marks of each student, along with the name of student **[4]**

Q3) a) Differentiate between conflict and view serializability. Given precedence graph is the corresponding schedule, is it conflict serializable? **[4]**

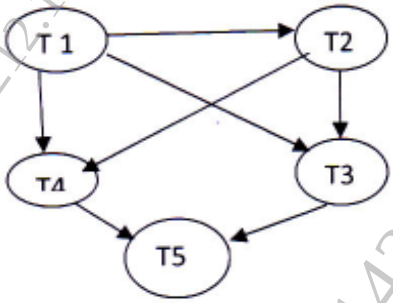

Fig 3.a.1

b) What is cursor? Why it is Needed? Explain different phases of cursors with example. **[6]**

OR

Q4) a) What is mean by concurrency? What types of anomalies were possible due to Concurrent executions? **[6]**

b) Explain the CRUD operation in MongoDB with suitable example. **[4]**

Q5) a) For the following query type, state which of the partitioning technique is best suited? **[3]**

i) Scanning the relation

Eg: select * from Student;

ii) Point queries

Select Roll_no, name, Percentage from Student, Marks where class = ' TE';

iii) Range queries

Eg: Select Roll_no, Name, Percentage from student , Marks where Class In ('TE', 'BE');

b) What is fragment of relation? What are the main types of fragmentation? Why a fragmentation is useful concept in distributed database design? **[7]**

c) Write short note on: (any two) **[8]**

i) Parallel database architecture

ii) Centralized data base management system

iii) Replication of data in distributed database system

OR

Q6) a) Explain which database system architecture will you prefer for the following applications - support your answer with brief explanation **[6]**

i) Banking organization.

ii) Railway reservation system

iii) College admission system

b) Why distributed database is required? Draw an architecture of distributed database system? Explain various types of distributed database systems architecture. **[6]**

c) Discuss two tire and three tire client server architecture. **[6]**

Q7) a) Explain the following terms in XML with examples **[7]**

i) Documents

ii) Elements

iii) Nested/sub elements

iv) Attributes

v) Namespace

vi) DTD

vii) Schema

b) What are the different data types in JSON? Discuss about JSON object and ARRAY in details. **[5]**

c) Compare Hadoop and RDBMS from following perspectives: Volume of data, ACID property, Schema, Variety of data handling. **[4]**

OR

Q8) a) What is XML Schema? Give XML Schema for the following banking system: account (account_number, branch_name, balance)

Customer(customer_number, customer_street, customer_city), Depositor(customer_number, account_number) **[6]**

b) Draw and discuss Hadoop Master salve architecture (discussion should include name node, secondary name node, data node, job tracker, task tracker and their specific roles) **[6]**

c) Compare with suitable examples **[4]**

i) RDBMS and XML

ii) JSON and XML

Q9) a) i) Define Data warehouse. Why is it needed? Draw architecture of data warehouse?

ii) Compare OLTP and OLAP

[8]

b) Explain Knowledge Discovery Process in detail. **[8]**

OR

Q10)a) Write short note on: (any two) **[8]**

i) SQLite database

ii) Machine learning and big Data

iii) Data Mining

iv) Data warehouse conceptual models.

b) Why there is need for Mobile database? Draw and explain the architecture of Mobile database. **[8]**