B.E. (Information Technology) Sixth Semester (C.B.S.)
Database Management Systems

1090

Notes : 1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Give classification of DBMS and explain using the following –   8
   i) Classification on the basis of number of users.
   ii) Classification on the basis of site location.
   iii) Classification on the basis of type and extent of use.

   b) Explain data independence concept in DBMS.   6

OR

2. a) Differentiate between file processing & DBMS.   7

   b) Explain four relational Algebra operation in detail with example.   7

3. a) Construct a B+ tree for the following set of key value: 7
   (1,4,7,10,17,21,31,25,18,19,20,28,42) having n = 4 and n = 6

   b) Explain the concept of Indexing.   4

   c) What do you mean by integrity constraints.   2

OR

4. a) List various file organization methods and explain different ways of organizing records in a file.   7

   b) Compare primary & secondary index.   6

5. a) Draw an ER diagram for collage management system.   7

   b) A table R has attributes P,Q,R,S,T,U,V,W and satisfy following functional dependencies.   6

   $PQR \rightarrow S$

   $PQ \rightarrow U$

   $Q \rightarrow V$

   $R \rightarrow W$

   i) What is the key for relation R
   ii) Decompose R into 2NF
   iii) Decompose R into 3NF

OR

6.		What is normalization and why is it needed? Explain the process in detail. Also explain 1NF, 2NF and 3NF with example.	13
7.	a)	Explain the different phases involved in Query processing.	6
	b)	What do you mean by Materialization? How do pipelining overcome materialization?	4
	c)	Explain the different evaluation plan. Why left approach is more preferable?	4

<div align="center">OR</div>

8. a) Describe Query optimization in detail. **6**

b) Let relations r_1 (A, B, C) and r_2 (C, D, E) have following properties R_1 has 20,000 tuples and r_2 has 45,000 tuples 25 tuples of r_1 on r_1 block and 30 tuples of r_2 on 1 block. Estimate number of block access required using each of the following join strategies of $r_1 \times r_2$ **8**

   i) Nested loop join
   ii) Block nested loop join
   iii) Merge join
   iv) Hash join

9. a) Explain the states of a transaction with the help of state transition diagram. **6**

b) What is conflict serializability? Explain different form of schedule equivalence i.e. conflict serializability. **7**

<div align="center">OR</div>

10. a) Describe different types of failures that occurs in the system? How are they recovered? **7**

b) Write short note on **any two** **6**
   i) Recoverability
   ii) Check points
   iii) Three phase locking protocol

11. a) Consider the following relational database. **8**
Salesperson (Name, Percent – of – quota Sal)
Order (number, custname, salesperson amt)
Customer (name, city, industry – type) for each of the queries given below, give expression in SQL.
   i) Find names and quota percentage of sales people who have an order with ASIAN CONSTRUCTION in descending order of quota percentage.
   ii) Find names of salespeople who have an order with a customer in MUMBAI.
   iii) Find names of salespeople who have two of more orders.
   iv) Find the names of salespeople who have an order with all customers.

b) Define Integrity constraints. Explain different types of integrity with suitable example. **5**

<div align="center">OR</div>

12. a) Write short notes on **6**
   i) Dynamic SQL
   ii) Embedded SQL

b) Enlist and explain with example. **7**

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