UNIVERSITY OF PUNE

[4363]-251

T. E. (Computer & IT. Semester I) Examination - 2013

Database Management Systems

(2008 Pattern)

[Total No. of Questions:] **[Total No. of Printed Pages :2]**

[Time: 3 Hours] **[Max. Marks: 100]**

Instructions:

1) *Answers to the two sections should be written in separate books.*
2) *Black figures to the right indicate full marks.*
3) *Assume suitable data if necessary.*
4) *Solve Section 1: Q1 or Q2, Q3 or Q4, Q5 or Q6*
5) *Solve Section 2: Q7 or Q8, Q9 or Q10, Q11 or Q12*

SECTION - 1

Q1 A) How Following Problems are handled with DBMS. [6]

i. Data Isolation.

ii. Data Redundancy and Inconsistency.

iii. Data Integrity

B) Explain with Example how E-R diagrams are converted into tables [6]

C) Explain the need for the following. [6]

i. View

ii. Foreign Key.

OR

Q2 A) Explain various database Languages [8]

B) Explain various Data Models used in DBMS. [10]

Q3 A) Given relation schema: R(A,B,C), S(D,E,F). Let relation r(R) and s(S) be given. Convert following SQL Statements in relational algebra form. [8]

1. Select * from r where B = 17
2. Select A,F from r,s where r.C = s.D
3. Update r, set B = B*15 where A='aaa'
4. Select * from s where E < 20

B) Explain various operators in relational Algebra. [8]

OR

Q4 A) What is cursor? Explain various types of Cursor. [8]

B) Explain Stored Procedures and Triggers. [8]

Q5 A) Explain why 4 NF is more desirable than BCNF. Rewrite the definition of 4NF and BCNF using the notions of domain constrains and general constraints.

B) Specify Armstrong's axioms. Use Armstrong's axioms to prove the soundness of pseudo transitivity rule. [8]

OR

Q6 A) Let R=(A,B,C,D,E) and let M be the following set of multivalued dependencies. [8]

A→→BC, B→→CD, E→→AD.

List the non-trivial Dependencies in M+

B) Describe the concept of transitive dependency and explain how this concept is used to define 3 NF. [8]

SECTION – 2

Q7 A) What is ordered indices? Explain the types of Ordered indices with suitable example. [9]

B) Explain detail use of B Tree as an indexing technique. Compare B Tree and B+ Tree. [9]

OR

Q8 A) Explain Following: [9]

i. Dense Index.

ii. Sparse Index.

iii. Clustered Index.

B) Give the Transformation Rules for Relational Expressions. [9]

Q9 A) Explain the concept of 'transaction'. Describe ACID properties for transaction. [8]

B) Show that two phase locking protocol ensures conflict serializability [8]

OR

Q10 A) Explain Time Stamp Based Protocol. [8]

B) State and Explain Thomas Write rule [8]

Q11 A) How does the concept of an object in the object oriented model differ from the concept of an entity in the E-R model. [8]

B) Explain the need of Backup and Replication. [8]

OR

Q12 A) What is fragment of relation? What is main types of fragments? [8]
Why a fragmentation is useful concept in distributed database design?

B) Write short note on: [8]

i) Data Warehouse Manager

ii) Pointer Swizzling Techniques