15162

3 Hours/100 Marks   Seat No.

Instructions :   *(1)* ***All*** *questions are* ***compulsory.***
      (2) Illustrate your answers with neat sketches ***wherever*** *necessary.*
      (3) Figures to the ***right*** *indicate* ***full*** *marks.*
      (4) Assume suitable data, if ***necessary.***
      (5) Preferably, write the answers in ***sequential*** *order.*

Marks

1. A) Attempt **any six** of the following :   **12**
   a) Enlist different components of DBMS.
   b) What is meant by data redundancy ?
   c) List any four DBMS software.
   d) List various data models.
   e) Draw the state diagram of transaction.
   f) Define attribute and entity.
   g) Define normalization.
   h) What is meant by query optimization ?

   B) Attempt **any two** of the following :   **8**
     a) Explain the steps used in query processing with suitable diagram.
     b) List and explain the types of integrity constraints in detail.
     c) Explain ACID properties of transaction.

2. Attempt **any four** of the following :   **16**
   a) State properties of Boyce Codd Normal form.
   b) Describe Relational Model with example.
   c) Describe Commit and Rollback with syntax.
   d) What are sequences ? Why it is used ? Create sequence for STUDENT table.
   e) Give any four advantages of using PL/SQL.
   f) List and explain any four functions of Database Administrator.

3. Attempt **any four** of the following :   **16**
   a) Consider the following database :
     Employee (emp_id, emp_name, emp_city, emp_addr, emp_dept, join_date)
     Solve the following query :
      i) Display the names of employees in capital letters.
      ii) Display the emp_id of employee who live in city Pune and Mumbai.
      iii) Display the details of employees whose joining date is after '01-Apr.-1997'.
      iv) Display the total number of employees whose dept. no. is '10'.
   b) What are Predefined exception and User defined exceptions ?

Marks

c) Consider the following Relational algebra schema
STUDENT (RNO, Name, DOB, Percentage, DNO)
DEPARTMENT (DNO, DNAME, HEAD)
Write relational algebra expressions :
   i) Find students name and course from Computer Dept.
   ii) Get the Students name who has percentage greater than 70.
d) What are views ? Give its syntax and explain its advantages.
e) What is lock ? Explain types of locks.
f) What is data warehousing and data mining ?

4. Attempt **any four** of the following :   **16**
   a) Draw an E-R diagram of hospital management system.
   b) Write a PL/SQL program to find the square of a number given by user using WHILE ....LOOP. (accept the number from user dynamically).
   c) Describe Grant and Revoke commands.
   d) Describe string function, date and time function.
   e) What is index ? Explain types of index.
   f) Draw and explain client server architecture.

5. Attempt **any four** of the following :   **16**
   a) Compare Network and Hierarchical model.
   b) What are snapshots ? Give its uses. How to create a snapshot ?
   c) Write a PL/SQL program using while loop to display n even numbers.
   d) List out any four statements of PL/SQL.
   e) Consider the structure as
      Product_Master = {prod_id, prod_name, rate}
      Purchase_details = {prod_id, quantity, dept_no, purchase_date}
      Write a relational algebra expression for the following :
        i) Get product_id, product_name and quantity for all purchased product
        ii) Get the products with rates between 100 and 4500.
   f) Explain 3NF with example.

6. Attempt **any four** of the following :   **16**
   a) What is database trigger ? Compare database triggers and procedures and explain the use of database trigger.
   b) Explain PL/SQL block structure.
   c) Explain with example group by and having clause.
   d) List types of cursor and explain each with example.
   e) List and explain any 4 arithmetic operators in SQL with example.
   f) Consider the structure for book table as Book_master {book_id, book_name, subcode, author, no_of_copies, price}.
      Write SQL queries for the following :
        i) Display total no. of books for subject 'DBM'.
        ii) Get authorwise list of all books.
        iii) Display all books whose prices are between Rs. 200 and Rs. 500.

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