Exam. Code : 103205
Subject Code : 1178

B.A./B.Sc. 5th Semester

COMPUTER SCIENCE

(Database Management System and Oracle)

Time Allowed—3 Hours] [Maximum Marks—75

Note :— Attempt any **FIVE** questions. All questions carry equal marks.

1. (a) Discuss the three level architecture of database management systems. Explain the various types of data independence and need of mapping. 9
   (b) Differentiate between DDL, DML and DCL. 6
2. (a) Explain different data models. Compare hierarchical data model with network data model. 6
   (b) Explain the following terms with suitable example :
   (i) Primary key
   (ii) Join
   (iii) Data dictionary. 9
3. (a) Illustrate the fact that BCNF is strictly stronger than 3NF with the help of an example. 6
   (b) Define normalisation. Why is it needed ? Explain successive normalisations in designing a relational database by taking a suitable example. 9

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4. (a) What is meant by concurrent execution of database transactions in multi user system ? Discuss why concurrency control is needed and give informal examples. 9
   (b) Explain the mechanism for maintaining database security. http://www.gnduonline.com 6
5. (a) What is a procedure ? What is function ? Bring out the differences. Explain with examples. 9
   (b) Write a program in PL/SQL to create a trigger to restrict the deletion of record from the table 'Employee' when the day of week is 'Monday'. 6
6. (a) Explain the basic operations performed in relational algebra with the example of each. 9
   (b) What is the role of DBA in database ? 6
7. (a) The given database schema is :

   Employee (FName, Initial, Lname, ENO, DoB, Address, Sex, Salary, Supereno, Dno)

   Department (Dname, Dnumber, mgreno, mgrstartdate)

   Dept_locations (Dnumber, Dlocation)

   Project (Pname, Pnumber, plocation, dnum)

   Works_on (EENo, PNo, hours)

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Dependent (EENo, Dependent_Name, Sex, BDate, Relationship)

Write the queries in SQL with the above schema :

(i) Retrieve the name and address of all employees who work for the 'Research department'.

(ii) Retrieve the average salary of all female employees. 9

(b) Explain the following :

(i) Integrity constraints

(ii) Logical and physical view of DBMS. 6

8. (a) What is E-R diagram ? Explain various symbols used in E-R diagram. Discuss the relevance of E-R diagrams in database design and illustrate the same with suitable examples. 9

(b) What are object-oriented DBMS ? How can these be compared with RDBMS ? Discuss their advantages and disadvantages. 6