B.Sc. Information Technology Semester—IV

DATABASE MANAGEMENT SYSTEM & ORACLE

Paper–I

Time Allowed—3 Hours]   [Maximum Marks—75

Note : There are **EIGHT** questions in the question paper. The candidates are required to attempt any **five** of them. Each question carries 15 marks.

1. What is a database management system (DBMS) ? Discuss the architecture and levels of DBMS.   15

2. Compare Relational model, Hierarchical model and Network model with each other.   15

3. Explain the similarities and dissimilarities between BCNF and 3rd normal form. Explain the cases where fourth normal form is applicable and how it removes the anomalies.   15

4. Why Built-in functions are required in Oracle ? What is single-row class of Built-in functions ? Explain the various categories of single-row functions with the help of suitable SQL queries.   15

5. What are the problems associated with two-phase locking protocols ? Briefly discuss the solutions to these problems. 15

6. Consider the following relational database

   employee (employee-name, street, city)

   works (employee-name, company-name, salary)

   company (company-name, city)

   manages (employee-name, manager-name)

   Give an expression in SQL to express each of the following queries :

   (i) Find the names and cities of residence of all employees who work for XYZ Bank and draw salary more than 10000.

   (ii) Find the names, street address, and cities of residence of all employees who work for ABS Bank and earn less than average salary of the employees of bank.

   (iii) Find the names of all employees in this database who do not live in the same city as the company for which they work.

   (iv) Find the names of all employees who live in the same city and not on the same street as do their managers.

3061(2517)/STB-14028 2 (Contd.)

(v) Find the names of those employees whose first name matches with the first names of their managers.

15

7. What are joins ? Explain various types of joins with the help of suitable examples. 15

8. Write short notes on the following :

(i) Binary and shared locks

(ii) Database triggers. 2×7.5=15