(i) **Printed Pages: 3**

Roll No. ....

(ii) **Questions** : **9**

Sub. Code : | 0 | 9 | 4 | 1 |

Exam. Code : | 0 | 0 | 3 | 0 |

Bachelor of Computer Applications 4ᵗʰ Semester

(2054)

DATABASE MANAGEMENT SYSTEM

Paper : BCA-16-405

Time Allowed : Three Hours]   **[Maximum Marks : 65**

Note :—Attempt **FIVE** questions in all, including Q. No. **9** in Section-E, which is compulsory and taking **ONE** each from Section-A, B, C and D.

SECTION—A

1. Compare DBMS and early file systems bringing out the major advantages of the database approach. With a neat block diagram, explain the architecture of a typical DBMS.   13

2. Explain the difference between weal and strong entity set with suitable examples. Construct an ER diagram for hospital management system with a set of patients and a set of doctors. Associated with each patient a log of the various tests and examinations conducted.   13

SECTION—B

3. Consider the relation schema R(A, B, C, D, E, F) and the functional dependencies A → B, C → DF, AC → E, D → F. What is the primary key of this relation R ? What is its highest normal form ? Preserving the dependency, decompose R into third normal form. 13

4. Illustrate the differences between Hierarchical, Network and Relational data models with the help of suitable examples. Explain why relational data model is a better choice over the two. Justify your answer. 13

SECTION—C

5. (a) Discuss the various DDL and DML commands with illustrations in SQL.

   (b) Explain any three aggregate functions in SQL with appropriate examples. 6,7

6. (a) What is a view ? How do views support logical data independence ? How are views used for security ? How are queries on views evaluated ?

   (b) Explain the use of GRANT and REVOKE commands to control the access of the database with examples. 6,7

SECTION—D

7. Consider the following relational tables :

   employee (person-name, street, city)

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

   company (company-name, city)

   manages (person-name, manager-name)

Write SQL queries for the following : (i) list the names of the employees who work for the company 'Wipro' along with the cities they live in (ii) find the names of employees who work for the company 'Infosys' with a salary more than Rs. 50,000 (iii) find the names of the employees who do not work for the company 'HCL'.   13

8. Explain the following with examples :

   (a) Cursor management in PL/SQL

   (b) Data types in PL/SQL.   6,7

SECTION—E

(Compulsory Question)

9. (a) Define two levels of data independence in DBMS with examples.

   (b) Explain with examples, basic constraints that can be specified when a relational database table is created.

   (c) Explain the use of the SQL GROUP BY clause and SQL HAVING clause with syntax and examples.

   (d) What is difference between implicit and explicit SQL cursors ?   3,3,3,4