NRT/KS/19/2226

Bachelor of Computer Application (B.C.A.) Semester—III Examination

DATA BASE MANAGEMENT SYSTEM

Paper—II

Time : Three Hours]   [Maximum Marks : 50

N.B. :— (1) **All** questions are compulsory and carry equal marks.

        (2) Draw neat and labelled diagrams wherever necessary.

EITHER

1. (a) What is Database Administrator ? Mention the functionalities of DBA. 5

   (b) Draw and explain three level architecture of DBMS. 5

OR

   (c) State and explain the objectives of Database Management System. 5

   (d) Explain the different database users. 5

EITHER

2. (a) Draw an E-R diagram for Hospital Management System. 5

   (b) Explain Generalization and Specialization with suitable example. 5

OR

   (c) Differentiate between Weak Entity Set and Strong Entity Set. 5

   (d) List different symbols used in E-R diagram and explain their meaning. Give one example of E-R diagram. 5

EITHER

3. (a) For the relation P and Q given below :

P		**Q**	
EMP No.	**EMP Name**	**EMP No.**	**EMP Name**
111	XYZ	131	OPQ
131	OPG	141	KLM
141	KLM	145	EFG
147	ABC	151	IJK
151	IJK		

Find :

(i) $P \cup Q$

(ii) $P - Q$

(iii) $P \cap Q$ 5

   (b) List and explain aggregate functions with example. 5

OR

   (c) Explain the following fundamental operations with examples :

      (i) PROJECT

      (ii) SELECT 5

   (d) Consider the following relations :

      Depositor (cust_name, acct_no)

      Borrower (cust_name, loan_no)

   Answer the following query in relational algebra :

   (i) Find the names of all bank customers who have either an account or loan or both.

   (ii) Find the names of customers who have taken loan above Rs. 1,00,000. 5

EITHER

4. (a) Explain BCNF with suitable example.   5

   (b) Explain multivalued dependency with suitable example.   5

   OR

   (c) List all functional dependencies satisfied by the relation :

A	B	C
a1	b1	c1
a1	b1	c2
a2	b1	c1
a2	b1	c3

        5

   (d) What is First Normal Form (1NF) ? Discuss problems arising in three basic operations insert, delete and update when relation is in 1NF. Explain with a suitable example.   5

5. (A) Explain in brief 'Network Model'.   2½

   (B) Explain the following keys :

       (i) Candidate key

       (ii) Super key   2½

   (C) Explain assignment operation with example.   2½

   (D) Discuss various advantages of normalization.   2½