Bachelor of Science (B.Sc.) (I.T.) Semester—II Examination
DATABASE MANAGEMENT SYSTEM
Paper—V

Time : Three Hours] [Maximum Marks : 50

N.B. :— (1) **ALL** questions are compulsory and carry equal marks.
(2) Draw neat and labelled diagram wherever necessary.

EITHER

1. (A) Explain the role of DBA in DBMS. 5

(B) What are the problems in traditional file processing system ? 5

OR

(C) Explain the Network Data Model. 5

(D) What do you mean by Database ? Discuss the types of database users. 5

EITHER

2. (A) Differentiate between weak entity and strong entity. 5

(B) Define the following :

(i) Primary key

(ii) Candidate key

(iii) Super key. 5

OR

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

(D) Define attribute. Explain :

(i) Simple and composite

(ii) Single and multivalued

(iii) Null attribute. 5

EITHER

3. (A) Explain selection and projection operations with example. 5

(B) Consider the following relations :

Borrower (Cust_name, Loan_no)

Loan (Branch_name, Loan_no, Amount)

Answer the following query in relational algebra :

Find the names of all customers who have a loan at MUMBAI branch. 5

OR

(C) What is natural join operation ? Explain with example. 5

(D) Explain Union and Intersection Operation. 5

EITHER

4. (A) Write all rules for Armstrong's axioms for a set F which generates F^+ relation. 5

(B) What is Normalization ? Give its objectives. 5

OR

(C) Let R be a relation with attributes as shown, R = (A, B, C, G, H, I) and the set of functional dependencies are :

$\{A \rightarrow B, A \rightarrow C, CG \rightarrow I, CG \rightarrow H, B \rightarrow H\}$

then find F^+. 5

(D) Explain Second Normal Form (2NF). 5

5. Attempt ***all*** :

(A) Explain data independence. 2½

(B) Define Composite key and Foreign key. 2½

(C) Explain aggregate functions with example. 2½

(D) Explain multi-valued dependency with example. 2½