**Bachelor of Science (B.Sc.) Semester—V (C.B.S.) Examination**
**COMPUTER SCIENCE**
**Paper—2**
**(Database Management System)**

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

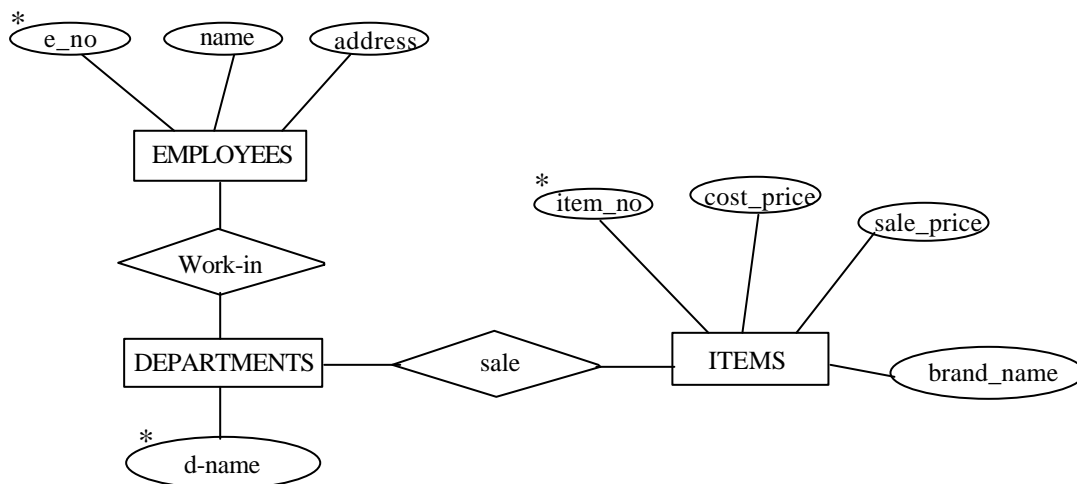(B)  Explain the Network data model with suitable example.                                        5

**OR**

(C)  Explain the different components of database management system.                               5

(D)  Explain the three level architecture of DBMS.                                                5

**EITHER**

2.  (A)  Explain Data mappings.                                                                     5

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

**OR**

(C)  Give the Table representation for following E-R diagram.



5

(D)  Explain Aggregation with suitable example.                                                   5

**EITHER**

3. (A) Explain the Division operation with suitable example.  5

   (B) Consider the following relations

   Depositor (Cust_name, acct_no)

   Borrower (Cust_name, Loan_no)

   Answer the following query in relational algebra : Find the names of all bank customers who have either an account or a loan or both.  5

**OR**

   (C) Explain the Cartesian product operation with suitable example.  5

   (D) 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 Nagpur Branch.  5

**EITHER**

4. (A) Identify the functional dependencies in the following table :—

| J | K | L |
|---|---|---|
| x | 1 | 2 |
| x | 1 | 3 |
| y | 1 | 4 |
| y | 1 | 3 |
| z | 2 | 5 |
| P | 4 | 7 |

   5

   (B) Explain with example Second Normal Form (2NF).  5

**OR**

   (C) Explain BCNF with suitable example.  5

   (D) Explain the multivalued dependency.  5

5. (A) Explain data migration.  2½

   (B) Explain the select operation.  2½

   (C) Explain the primary key.  2½

   (D) What is Normalization ?  2½