Bachelor of Science (B.Sc.) Semester-V (C.B.S.) Examination

DATABASE MANAGEMENT SYSTEM

Paper—2

(Computer Science)

Time : Three Hours] [Maximum Marks : 50

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

(2) Draw neat labelled diagram wherever necessary.

EITHER

1. (a) Give classification of Data Models and explain in brief. 5

(b) Explain network data model with example and discuss advantages and disadvantages of this model. 5

OR

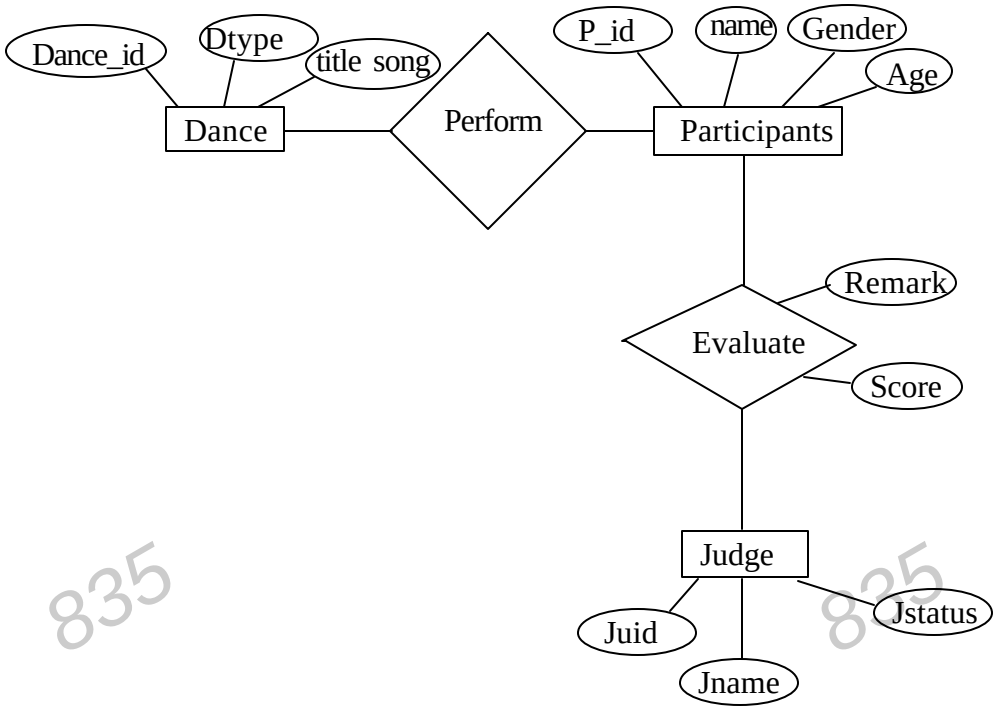
(c) Explain different problems associated with traditional file processing system. 5

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

EITHER

2. (a) Explain super key, candidate key and primary key with suitable example. 5

(b) Give tabular representation for the following E-R diagram. 5



OR

(c) Define attribute. Explain :

(i) Simple and composite attribute

(ii) Single valued and multivalued

(iii) Null attribute

(iv) Derived attribute. 5

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

EITHER

3. (a) Explain following operations with suitable example :

(i) Union

(ii) Set difference. 5

(b) Consider following relation :

NSS_UNIT(stu_name, volunteer_no)

NCC_UNIT(stu_name, cadet_no)

Answer following query in relational algebra :

Find names of all students who are members of both NSS_UNIT and NCC_UNIT. 5

OR

(c) Explain left, right and full outer join operation with example. 5

(d) Consider following relation :

loan(branch_name, loan_no, loan_amt).

Construct queries in relational algebra for following :

(i) Find all tuples with branch name "XYZ".

(ii) Find all tuples with loan_amt more than 2 lac.

(iii) Find all tuples with branch name "PQR" and loan_amt more than 5 lac.

(iv) Find branch_name of loan_no "LOOA58".

(v) Find loan_no pertaining to "MNO" branch. 5

EITHER

4. (a) Explain 2NF. Discuss problems arising in three basic operations_insert, delete and update when relation is in 2NF. 5

(b) Given relation is :

J	K	L	M
X	1	2	5
X	1	2	6
Y	1	3	7
Y	1	3	8
Z	2	4	9
P	4	7	5

Verify following :

(i) (J, K) $\rightarrow$ L

(ii) (J, K) $\not\rightarrow$ (L, M)

(iii) (J, K) $\not\rightarrow$ M

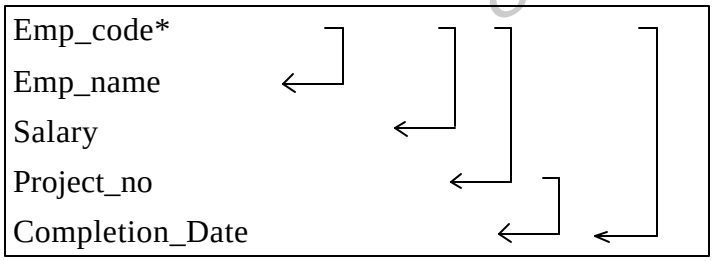
(iv) L $\rightarrow$ K

(v) L $\not\rightarrow$ M 5

OR

(c) State why following relation does not satisfy 3NF and convert it into 3NF

EMP_PROJECT



5

(d) Explain partial functional dependency and transitive functional dependency with example. 5

5. Attempt **ALL** :

(a) Explain Data Migration. 2½

(b) Explain Relationship giving suitable example. 2½

(c) Explain projection operation with suitable example. 2½

(d) Write advantages of representing data in normalized form. Also draw successive levels of normal forms. 2½