TDC (CBCS) Even Semester Exam., 2024

COMPUTER SCIENCE

(4th Semester)

Course No. : CSCHCC–402T

(DBMS)

Full Marks : 50
Pass Marks : 20

Time : 3 hours

The figures in the margin indicate full marks for the questions

UNIT—I

1. Answer any *two* of the following questions : 2×2=4

(a) Define DBMS. Mention any two real-world applications of DBMS.

(b) Write the different roles of DBA.

(c) What do you mean by the inconsistency state of the database? Give example.

2. Answer any *one* from the following questions : 6

(a) What is data abstraction? Discuss the three levels of data abstraction.

(b) Write short notes on the following : 3×2=6

(i) Relational data model

(ii) *E-R* data model

UNIT—II

3. Answer any *two* of the following questions : 2×2=4

(a) Why duplicate values are not allowed in a relation?

(b) What do you mean by schemas and instances?

(c) Differentiate between primary key and candidate key.

4. Answer any *one* from the following questions : 6

(a) *(i)* Define SQL. Write the basic data types available in SQL. 3

(ii) List two reasons why null values might be introduced into the database. 3

(b) Consider the following relational schemas :

Customer (Cust_name, Cust_street, Cust_city)
Branch (Branch_name, Branch_city, Assets)
Account (Branch_name, Account_number, Balance)
Loan (Branch_name, Loan_number, Amount)
Depositor (Cust_name, Account_number)
Borrower (Cust_name, Loan_number)

Write the relational algebra queries of the following :

(i) Find the loan number whose branch name is 'Perryridge'.

(ii) Find those tuples pertaining to loans of more than ₹ 1200+ made by the 'Perryridge' branch.

(iii) Find all customers of the bank who have an account but not a loan.

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

(v) Find all customers who have both a loan and an account.

(vi) Find the names of all customers who have a loan at the bank, along with the loan number and the loan amount.

UNIT—III

5. Answer any *two* of the following questions : 2×2=4

(a) Write down the features of EER.

(b) When two sets of functional dependencies are said to be equivalent?

(c) Consider the following relation $R(A, B, C, D)$:

A	B	C	D
A_1	B_1	C_1	D_1
A_1	B_2	C_1	D_2
A_2	B_3	C_2	D_2
A_2	B_3	C_2	D_3
A_3	B_3	C_2	D_4

Check $A \rightarrow C$ and $C \rightarrow A$ are satisfied or not.

6. Answer any *one* from the following questions : 6

(a) Discuss the different inference rules to find the closure of any set of functional dependencies.

(b) With an example, discuss any *two* of the following : 3×2=6

(i) 1NF

(ii) 2NF

(iii) 3NF

UNIT—IV

7. Define any *two* of the following : 2×2=4

(a) Transaction log

(b) Commit point

(c) Rollback

8. Answer any *one* from the following questions : 6

(a) Discuss two-phase locking (2PL) protocol with an example.

(b) Why concurrency control is needed? Explain.

UNIT—V

9. Answer any *two* of the following questions : 2×2=4

(a) Mention two disadvantages of sequential file organization.

(b) What do you mean by file of ordered and unordered record?

(c) Write the objectives of file organization.

10. Answer any *one* from the following questions : 6

(a) Discuss the different types of file organization.

(b) Explain the following indexing methods : 3×2=6

(i) Primary indexing

(ii) Clustering indexing

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