WEST BENGAL STATE UNIVERSITY

B.Sc. Honours/Programme 2nd Semester Examination, 2021

CMSHGEC02T/CMSGCOR02T-COMPUTER SCIENCE (GE2/DSC2)

Time Allotted: 2 Hours   Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.

Answer Question No. 1 and any *four* from the rest

1. Answer any *four* questions from the following: 2×4 = 8

    (a) What do you mean by DDL and DML?

    (b) What is functional dependency?

    (c) What is Normalization?

    (d) What is the difference between logical and physical data independence?

    (e) 3NF is stronger than 2NF. — Justify the statement.

    (f) Define weak entity set with an example.

    (g) Define insertion anomaly with an example.

2. (a) What is DBMS?   2

    (b) Write the advantages of DBMS over file management system.   2

    (c) Describe three layer architecture of DBMS.   4

3. (a) What do you mean by derived attribute?   2

    (b) Briefly explain the following Relational algebraic operations with example: 2+2

    (i) Cartesian Product (ii) Projection Operation.

    (c) What is Metadata and what is data dictionary?   2

4. Consider the following relational schema:

    Account (Account-number, branch-name, balance)

    Loan (Loan-number, branch-name, balance)

    Depositor (Depositor-Id, Customer-name, Account-number)

    Borrower (Borrower-Id, Customer-name, Loan-number)

    Write queries in SQL for the following:

    (a) Find the names of all branches in the loan relation.   2

    (b) Find all loan numbers for loan made at Kolkata branch.   2

     (c)   Find all customers who have a loan, an account, or both.   2

     (d)   Find the number of depositors in the bank.   2

5. (a) What is the role of DBA?   3

    (b) What is relationship? Give an example of one-to-one and many-to-many relationship.   3

    (c) What is an ER diagram?   2

6. (a) Discuss Division operation in relational algebra with example.   5

    (b) We can convert any weak entity set to a strong entity set by simply adding attributes. Why, then, do we have weak entity set?   3

7. (a) Why do we need to normalize the database? Explain full functional dependency with a suitable example.   6

    (b) Are there any drawbacks of normalization?   2

8.   Define the following with example:

    (a) Entity Set   2

    (b) Integrity Constraints   2

    (c) Candidate Key   2

    (d) Schema.   2

N.B. : *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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