



**WEST BENGAL STATE UNIVERSITY**  
B.Sc. Honours/Programme 2nd Semester Examination, 2021

**CM SHGEC02T/CM SGCOR02T-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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