



B.Tech III Semester Regular Examinations, February 2022
DATABASE MANAGEMENT SYSTEMS
(Common to CSE, CSE(AI&ML) and CSE(DS))

Maximum Marks: 70

Date: 24.02.2022 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 Discuss about different levels of Abstraction.
- 2 What is Enforcing Integrity Constraint? Give Examples.
- 3 Explain Natural Join with an example.
- 4 Consider the following database schema to compose queries in TRC and DRC.
Loan(Loanid, Branchname, Amount) Borrower(Cust_name, Loanid)
Depositor(Cust_name, Account_number)
- 5 Given a relation R with 5 attributes ABCDE and the following FDs: $A \rightarrow B$, $BC \rightarrow E$ and $ED \rightarrow A$. Is R in 3NF? Justify.
- 6 Explain commands with respect to SQL: (i) Rename (ii) Alter
- 7 What is Atomicity of a transaction?
- 8 Discuss Serializability in detail.
- 9 What is Hash based Indexing?
- 10 What is database Recovery?

Part-B

Answer All the following questions.

(5X10M=50Marks)

- 11 (a) Explain Three level Architecture in DBMS.
(b) Explain Data Independence and its types in detail.

OR

- 12 (a) Explain database users, user interfaces, DBA and functions of a DBA.
(b) Explain views in SQL Language.
- 13 (a) With a suitable example explain division operation in relational algebra.
(b) What is Entity set? and also define Relationship set. List and explain the symbols used to draw ER Diagram.

OR

- 14 (a) Explain Additional Features of E-R Model.
(b) Draw ER diagram for the following: A teacher can teach many courses. A student can enroll in many courses. A course may be a part of one or many programs. A teacher can be mentor for many students, however a student can have only one mentor

- 15 (a) Explain the following operators in SQL with examples
 i)IN ii)EXCEPT iii)EXISTS 5M
 (b) What is Trigger? Explain how to implement Triggers in SQL? 5M
 OR
- 16 (a) Explain BCNF. Give an example. 5M
 (b) What is Functional dependency? Explain its usage in database design 5M
- 17 (a) Explain check point log based recovery scheme for recovering the database 5M
 (b) Explain the Time Stamp- Based Concurrency Control Protocol 5M
 OR
- 18 (a) Explain Two Phase locking protocol with example? 5M
 (b) Explain about Validation-Based Protocol. 5M
- 19 (a) Suppose that we are using extendible hashing on a file containing records with the following search-key values: 5, 9, 12, 16, 21, 25, 32, 34, 38, 42, 51, 55, 61, 65. Show that the extendible hash structure for this file if the hash function is $h(x) = x \bmod 3$ and bucket can hold five records. 5M
 (b) Discuss in detail about all File Organization Methods. 5M
 OR
- 20 (a) Compare Linear hashing and Extendable hashing 5M
 (b) Explain B+ trees? Discuss about Dynamic Index Structure. 5M