

C 61221

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Name.....

Reg. No.....

FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2019

(CUCBCSS—UG)

Computer Science

**BCS 4B 06—FUNDAMENTALS OF DATABASE MANAGEMENT SYSTEM
AND RDBMS**

(2014 Admissions)

Time : Three Hours

Maximum : 80 Marks

Part A

*Answer all questions.
Each question carries 1 mark.*

1. A software package to facilitate the creation and maintenance of a computerized database is called _____.
2. _____ express the number of entities to which another entity can be associated via relationship set.
3. The relational algebra operation which allows us to find tuples that are in one relation but not in another is called _____.
4. To sort the results of a query we always use _____ clause.
5. If every non-prime attribute A of a relation R is fully functionally dependent on the primary key of R, then R is said to be in _____.
6. The set of functional dependencies that is logically implied by F is called the _____ of F.
7. _____ is a mechanism to control concurrent access to a data item.
8. Reading the output of an uncommitted transaction is known as _____.
9. A _____ is a special kind of a stored procedure that executes in response to certain action on the table like insertion, deletion or updation of data.
10. A _____ is a memory area, for processing an SQL statement, which contains all information needed for processing the statement.

(10 × 1 = 10 marks)

Turn over

Part B

*Answer all the questions.
Each question carries 2 marks.*

11. Differentiate between logical and physical data independence.
12. Define the join operation in relational algebra.
13. Define 3 NF.
14. Compare conservative two-phase locking protocol with strict two-phase locking protocol.
15. Write the syntax for creating user defined functions in SQL.

(5 × 2 = 10 marks)

Part C

*Answer any five questions.
Each question carries 4 marks.*

16. What is data abstraction ? How data abstraction is achieved in DBMS ?
17. What are the various facilities provided by a DBMS ? Explain.
18. Differentiate between procedural and non-procedural data manipulation languages.
19. Explain with example, the use of ORDER BY clause of SQL.
20. Convert the relation EMP_DEPT(ssn, ename, bdate, address, dnum, dname, mgrssn) with functional dependencies {{ssn}, {ename, bdate, address, dnum}, {dnum}, {dname, mgrssn}} into 3 NF.
21. Explain with an example, the concept of 4 NF.
22. Discuss lost update problem with an example.
23. Write a program using cursor to select the five highest paid employees from the EMP table.

(5 × 4 = 20 marks)

Part D

*Answer any five questions.
Each question carries 8 marks.*

24. With a neat diagram, explain about the structure of a DBMS.
25. Write short notes on:
 - (a) Advantages of using a DBMS.
 - (b) Conceptual schema and physical schema.

26. Discuss ER to relational schema mapping with a suitable example.
27. Show how the division operation can be implemented using the basic relational algebra operations. Illustrate its application through a realistic example.
28. Write short notes on:
- (a) Tuple relational calculus and domain relational calculus.
 - (b) Importance of weak entity set in database design.

29. Consider the following schema :

Suppliers(sid, sname, address).

Parts(pid, pname, colour).

Catalog(sid, pid, cost)

The **Catalog** relation lists the prices charged for parts by Suppliers. Write SQL statements for the following queries.

- (a) Find the pnames of parts for which there is some suppliers.
 - (b) Find the pnames of parts supplied by ABC suppliers.
 - (c) Find the snames of suppliers who supply every red part.
 - (d) Find the sids of suppliers who supply a red part and a green part.
30. (a) List the ACID properties of a transaction. Explain the usefulness of each.
- (b) How Two-Phase Locking protocol becomes a mechanism to ensure serializability ?
31. Write short notes on :
- (a) Join dependencies and 5 NF.
 - (b) Usage of Stored procedures within queries.

(5 × 8 = 40 marks)