B.Tech (Fourth Semester Computer Science and Engineering (C.B.C.S))
End Semester Examination Summer – 2023
Course Name: Data Base Management System

Course Code:**BCS2404**
Time: 3 Hours]

ADS/EFV5737K/3098
[Max.Marks: 60

Instructions to Candidates:
1. *All questions carry marks as indicated.*
2. *All the sub- questions (a, b, c, d, and e) of Que.1 in Section A are compulsory.*
3. *Solve any two sub-questions in Que. 2 to Que.6 in Section B.*
4. *Assume suitable data wherever necessary.*
5. *Use of non-programmable calculator is permitted.*

Section – A

Que.1

a)	Recall the definition of a Database Management System.	2 (CO1)
b)	Revise DDL Commands of SQL.	2 (CO2)
c)	Define the concept of database design.	2 (CO3)
d)	List the components of the physical hierarchy in a DBMS.	2 (CO4)
e)	List the ACID properties of a transaction.	2 (CO5)

Section – B

Que.2

a)	Explain COOD's rules in details.	5 (CO1)
b)	Draw an ER diagram of Hospital Management System.	5 (CO1)
c)	Describe Primary Key and Foreign Key example.	5 (CO1)

Que.3

a)	List and briefly explain the basic SQL data manipulation commands.	5 (CO2)
b)	Develop a PL/SQL stored procedure to calculate the average order value for a given customer.	5 (CO2)
c)	Analyze the benefits and limitations of using SQL joins versus subqueries for data retrieval.	5 (CO2)

Que.4

a)	Recall the key principles of normalization and explain their significance in database design.	5 (CO3)
b)	Apply normalization techniques to a given set of data to eliminate data redundancy and ensure data integrity.	5 (CO3)
c)	Explain the concept of functional dependencies and transitive dependencies and how they relate to normalization.	5 (CO3)

Que.5

    a) Apply a file organization method, such as B-tree or hash indexing, to a given database scenario to improve query performance.   5 (CO4)

    b) Differentiate between query processing and query optimization.   5 (CO4)

    c) Critically assess the trade-offs between disk-based and in-memory query processing techniques, considering factors such as speed and resource utilization.   5 (CO4)

Que.6

    a) Explain the concept of concurrency control in database transactions.   5 (CO5)

    b) Discuss the role of locks in ensuring data consistency during transactions   5 (CO5)

    c) Develop a set of guidelines and best practices for optimizing transaction throughput in a high-transaction-rate database.   5 (CO5)

ADS/EFV5737K/3098