WALCHAND COLLEGE OF ENGINEERING

(Government Aided Autonomous Institute)
Vishrambag, Sangli – 416415

Second Year B.Tech. Computer Science and Engineering
Re-Exam, ODD SEMESTER, AY 2022-23
Database Engineering (6CS223)

Re-Exam

PRN: _____

Day & Date: Wednesday, 13/09/2023 Time : 02.00 pm to 05.00 pm

Max Marks: **100**

IMP: Verify that you have received question papers with correct course code, branch etc.

Instructions
a) All questions are compulsory.
b) Writing question number on answer book is compulsory otherwise answers may not be assessed.
c) Assume suitable data wherever necessary.
d) Figures to the right of question text indicate full marks.
e) Mobile phones, smart gadgets and programmable calculators are strictly prohibited.
f) Except PRN anything else writing on question paper is not allowed.
g) Exchange/Sharing of stationery, calculator etc. not allowed.

Text on the right of marks indicates course outcomes (Only for faculty use)

		Marks	
1	A) Explain the key differences between a database management system (DBMS) and a file system.	06	CO1
	B) Define the terms "data model," "schema," and "instance" in the context of databases.	04	CO2
2	A) Define primary key, foreign key, and candidate key. How are they used in a relational database?	06	CO1
	B) Describe the process of creating and normalizing a relational database schema for a library management system.	06	CO3
	C) Explain the differences between INNER JOIN, LEFT JOIN, and RIGHT JOIN in SQL. Provide examples	08	CO2

Q3 A) Consider two relation schemas, "Students" and "Courses," with the following attributes:

Students:

StudentID (Primary Key)

FirstName

LastName

Age

Courses:

CourseID (Primary Key)

CourseName

Instructor

Write a relational algebra expression to find the FirstNames of students who are enrolled in a course taught by an instructor with the name "Dr. Smith." With explaination

B) Consider two relations, "Employees" and "Managers," with the following attributes:

Employees:

EmpID (Primary Key)

FirstName

LastName

Managers:

ManagerID (Primary Key)

ManagerFirstName

ManagerLastName

Write SQL queries to perform the following set operations and calculate the required results:

Union: Create a query to find the distinct full names (FirstName and LastName combined) of all employees and managers.

Intersection: Write a query to find the common employees who are also managers based on their FirstName and LastName.

Difference: Create a query to find employees who are not managers based on their FirstName and LastName.

Cartesian Product: Write a query to obtain a list of all possible combinations of employees and managers (without any conditions applied).

C) Explain ER model with its componenets 08

Q4	A)	Describe data dictionary.	06
	B)	Define index. Classify the index with difference between them.	06
	C)	Explain Hashing with an example	06
Q5	A)	Explain ACID properties with an example.	08
	B)	Explain Transaction state diagram in detailed manner with an example.	08
Q6	A)	Differentiate between authentication and authorization in details	08
	B)	Elaborate SQL Injection	08

..... End of question paper .....