WALCHAND COLLEGE OF ENGINEERING

(Government Aided Autonomous Institute)
Visharambag, Sangli – 416415

Second Year B.Tech. Computer Science and Engineering
ESE , EVEN SEMESTER, AY 2023-24
DATABASE ENGINEERING (6CS223)

ESE

PRN: _____

Day & Date: Saturday, 18/05/2024 Time : 3.00 pm to 5.00 pm

Max Marks: **50**

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	
Q1	A)	Compare and contrast various data models used in database management systems, discussing their strengths and weaknesses in different scenarios.	4	CO1
	B)	Demonstrate the use of aggregate functions, GROUP BY, and HAVING clauses in SQL queries, providing examples to illustrate how they are used to perform data analysis tasks.	4	CO2
	C)	Describe the dependency theory in the context of relational databases, focusing on functional dependencies and their role in determining the relationships between attributes. Provide examples to illustrate different types of functional dependencies. (WITH DIA)	4	CO3
Q2	A)	Discuss the importance of file organization in database systems, exploring various methods for organizing records within files and their respective advantages and disadvantages. Provide examples to illustrate your explanation.	6	CO2
	B)	Explain the role of a data dictionary in database management systems, outlining its functions in storing metadata and facilitating data manipulation operations. Discuss how a data dictionary enhances the efficiency and integrity of database operations.	6	CO3
Q3	A)	Describe the different states that a transaction can transition through during its execution in a database system. Explain the significance of each state and discuss how storage structures are used to manage transaction states effectively. (WITH DIA)	7	CO2

B) Discuss the concept of transaction processing in database systems, explaining the ACID properties and their significance in ensuring data integrity and consistency. Provide examples to illustrate how each property contributes to reliable transaction execution. (WITH DIA) 7

Q4 A) In a distributed system with multiple authentication providers, discuss the challenges and solutions associated with ensuring seamless user authentication across all services while maintaining security standards. 6

B) Analyse the impact of different RAID levels on database performance and reliability in a highly transactional environment. Discuss the trade-offs between performance, fault tolerance, and storage efficiency for each RAID level. (WITH DIA) 6

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