K. K. Wagh Institute of Engineering Education & Research, Nashik

(An Autonomous Institute From A.Y. 2022-23)

InSem Examination-IISummer2025	
Exam Seat No.:	
Academic Year:2024-2025	Semester: IV
Class: SY	Program: B.Tech
Branch Code: INT	Pattern:2023
Name of Course: Database Management System	Course Code:2308212
Max. Marks:30	Duration:1.15 Hrs.

Instructions: Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains Two page(s).
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last columns indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question.

		Marks	CO
Question No. 1			
1 a)	Design an ER diagram for an online marketplace where sellers can list products, buyers can browse and purchase products, and the system manages orders, payments, shipping, and reviews. Consider different product types (e.g., physical goods, digital downloads), various payment methods, and seller ratings.	(3)	CO5
1 b)	Explain the limitations inherent in file processing systems that necessitated the creation of DBMS. Identify and describe two principal advantages of employing a DBMS over the file-based approach.	(4)	CO5
Question No. 2			
2 a)	Explain the significance of data independence in a multi-user database environment. How does logical data independence differ from physical data independence?	(4)	CO5
2 b)	Explain different types of constraints (e.g., domain, entity integrity, referential integrity) with examples and how they are enforced.	(4)	CO5
	Group OR		
2 c)	What are Codd's rules, and why are they important for relational database systems? Explain any two of these rules in detail.	(4)	CO5
2 d)	Define the term null values in a database. How are nulls handled in SQL queries and other database operations? What are some of the challenges associated with using nulls?	(4)	CO5
Question No. 3			
3 a)	What is a functional dependency? How does it relate to the concept of normalization?	(3)	CO4, CO5
3 b)	Given the relations: STUDENT (StudentID, Name, CourseID) COURSE(CourseID, CourseName, Credits) Write relational algebra expressions for: a) Find the names of students enrolled in a course titled "Database Systems." b) Retrieve the names of students taking more than one course.	(4)	CO4, CO5

Question No. 4

4 a)	What are update anomalies? Describe insert, delete and modify anomalies with illustrative examples.	(4)	CO4, CO5
4 b)	Compare 2NF and 3NF. When is BCNF necessary? Provide a real-world example to illustrate your points.	(4)	CO4, CO5

Group OR

4 c)	Explain the different types of joins (left, inner) with examples and relational algebra notation.	(4)	CO4, CO5
4 d)	Explain the difference between partial dependency and transitive dependency. How do these dependencies affect the normal form of a relation?	(4)	CO4, CO5

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