



**K. K. Wagh Institute of Engineering Education & Research, Nashik**  
(An Autonomous Institute From A.Y. 2022-23)

SUMMER-2024	
Exam Seat No.:	
Academic Year:2023-2024	Semester:IV
Class:SY	Program:B.Tech
Branch Code:ADS	Pattern:2022
Name of Course:Database Management Systems	Course Code:ADS222014
Max. Marks:60	Duration:2.30 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 2 pages.
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.

**Question No. 1 Attempt following Question**

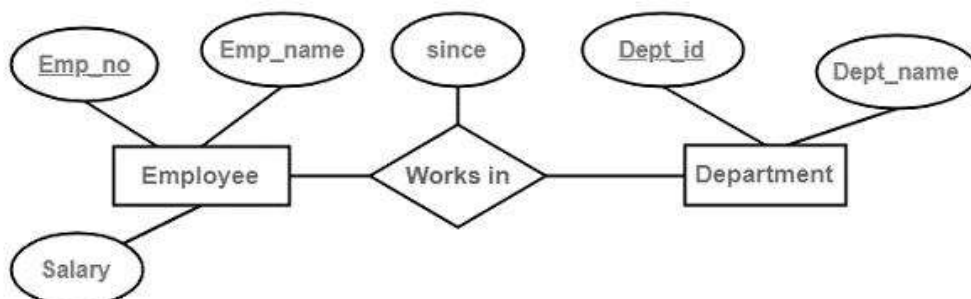
- 1 Explain DDL and DML Commands. (6) CO1

**Question No. 2 Attempt following Question**

- 2 Explain any three relational algebra operations with syntax and example. (6) CO2

**Question No. 3 Attempt following Question**

- 3.a) How many tables are required to represent the following Entity set and relationship set in the following ER diagram. convert the given ER diagram into tables. (6) CO3



**OR**

- 3.b) Construct ER Diagram for Car Insurance Company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents (6) CO3

3.c) Explain 3NF with suitable example. (5) CO3

**OR**

3.d) Explain different types of anomalies in the database. (5) CO3

3.e) What is meant by lossy and lossless decomposition. How can we perform lossless decomposition? (5) CO3

**OR**

3.f) Consider the Schema Employee(Emp\_No, Emp\_Name, Address, Dept\_No, Dept\_Name, Dept\_Manager). Does this schema have any anomalies? Justify (5) CO3

**Question No. 4 Attempt following Question**

4.a) Compare parallel and distributed databases. (6) CO4

**OR**

4.b) Explain client server architecture in distributed databases (6) CO4

4.c) Explain CAP theorem and BASE property of NoSQL Databases. (5) CO4

**OR**

4.d) What are the advantages of MongoDB over RDBMS . (5) CO4

4.e) Discuss the MongoDB aggregation framework with suitable example. (5) CO4

**OR**

4.f) State and explain MongoDB CRUD operations. (5) CO4, CO5

**Question No. 5 Attempt following Question**

5.a) State and explain ACID properties of the transaction. (6) CO5

**OR**

5.b) Differentiate between serial and serializable schedule. (6) CO5

5.c) List and explain different states through which transaction goes during its execution. (5) CO5

**OR**

5.d) What is recoverable schedule? Why recoverability of schedule is desirable? (5) CO5

5.e) Explain Shadow paging recovery scheme. (5) CO5

**OR**

5.f) Write short note on view serializability. (5) CO5

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