



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:INT	Pattern:2022
Name of Course:Database Management System	Course Code:INT222012
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 Three 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.

Question No. 1 Attempt following Question

- 1a) List ER diagram symbols & draw an ER diagram for a hospital management system with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests and examinations conducted. (6) CO5

Question No. 2 Attempt following Question

- 2a) State and explain 3NF with suitable example. (6) CO5

Question No. 3 Attempt following Question

- 3a) What is SQL? Explain the following structure of SQL queries with appropriate examples? (5) CO4, CO5
1) Select clause 2) Where clause 3) Aggregate function.

OR

- 3b) Explain Row level trigger and Statement level trigger with the help of example. (5) CO4, CO5
- 3c) i) Write an SQL query to fetch unique values of DEPARTMENT from the Worker table. (5) CO4, CO5
ii) Write an SQL query to fetch the number of workers for each department in descending order.

WORKER_ID	FIRST_NAME	LAST_NAME	SALARY	JOINING_DATE	DEPARTMENT
001	Monika	Arora	100000	2021-02-20 09:00:00	HR
002	Niharika	Verma	80000	2021-06-11 09:00:00	Admin
003	Vishal	Singhal	300000	2021-02-20 09:00:00	HR
004	Amitabh	Singh	500000	2021-02-20 09:00:00	Admin
005	Vivek	Bhati	500000	2021-06-11 09:00:00	Admin
006	Vipul	Diwan	200000	2021-06-11 09:00:00	Account
007	Satish	Kumar	75000	2021-01-20 09:00:00	Account
008	Geetika	Chauhan	90000	2021-04-11 09:00:00	Admin

OR

3d) Explain the types of join operation with suitable example. (5) CO4, CO5

3e) i) Write a query to fetch the number of employees working in the department 'HR'. (6) CO4, CO5

ii) Write a query to find all the employees whose salary is between 50000 to 100000.

iii) Write a query to fetch all the records from the EmployeeInfo table ordered by EmpLname in descending order and Department in the ascending order.

EmpID	EmpFname	EmpLname	Department	Project	Address	DOB	Gender
1	Sanjay	Mehra	HR	P1	Hyderabad (HYD)	01/12/1976	M
2	Ananya	Mishra	Admin	P2	Delhi(DEL)	02/05/1968	F
3	Rohan	Diwan	Account	P3	Mumbai(BOM)	01/01/1980	M
4	Sonia	Kulkarni	HR	P1	Hyderabad (HYD)	02/05/1992	F
5	Ankit	Kapoor	Admin	P2	Delhi(DEL)	03/07/1994	M

EmpID	EmpPosition	DateOfjoining	Salary
1	Manager	01/05/2024	500000
2	Executive	02/05/2024	75000
3	Manager	01/05/2024	90000
2	Lead	02/05/2024	85000
1	Executive	01/05/2024	300000

OR

3f) How the SQL query can be translated in relational algebra expressions with an example? (6) CO4, CO5

Question No. 4 Attempt following Question

4a) List and Explain the ACID properties of transaction processing? (5) CO2

OR

4b) What is a deadlock? Explain how deadlock detection and prevention is done. (5) CO2

4c) Explain Conflict Serializability and View Serializability. (5) CO2

OR

4d) Explain potential problems faced in concurrency control. (5) CO2

4e) What do you mean by timestamp-based protocol? Explain timestamp modeling protocol? (6) CO2

OR

4f) What is a transaction? What are the possible causes of transaction failure? (6) CO2

Question No. 5 Attempt following Question

5a) Explain Log-based Recovery: Deferred and Immediate. (5) CO1, CO3

OR

5b) Explain shadow paging recovery technique? List advantages and disadvantages of shadow paging. (5) CO1, CO3

5c) Differentiate parallel and distributed databases. (5) CO1, CO3

OR

5d) What are the design considerations for distributed databases? List Advantages and Disadvantages of distributed databases. (5) CO1, CO3

5e) Explain parallel databases, key elements of parallel database processing and Architecture of parallel databases. (6) CO1, CO3

OR

5f) What is a checkpoint? How checkpoint information is used in recovery operation following system crash explains with example? (6) CO1, CO3

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