MAY 2025 **P/ID 17615/PCA4M/ PCATC**

Time : Three hours Maximum : 80 marks

PART A — (10 × 2 = 20 marks)

Answer any TEN questions.

1. Write the characteristics that distinguish the database approach with the file-based approach?

2. Define instances and schemas of database?

3. Give an example of one to one and one-to-many relationship?

4. What is relational integrity constraint?

5. Draw a E-R diagram for n-ary relationship.

6. What is the purpose of file header?

7. Point out the mechanisms to avoid collision during hashing.

8. What is transaction-management component?

9. Give the reasons for allowing concurrency.

10. What are two pitfalls (problem) of lock-based protocols?

11. What is the role of the server in client-server architecture?

12. What is a database?

PART B — (5 × 6 = 30 marks)

Answer any FIVE questions.

13. Discuss the various advantages of DBMS.

14. What is functional dependency? Explain its use in database design.

15. Discuss the various types of entities with proper example.

16. Illustrate about static and dynamic hashing in file organization?

17. Sketch and concise the basic steps in query processing.

18. How can you implement atomicity and durability in transactions? Explain in detail.

19. Differentiate between homogeneous and heterogeneous databases.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

20. Consider the following tables:

Employee (Emp_no, Name, Emp_city)

Company (Emp_no, Company_name, Salary)

(a) Write a SQL query to insert five records in each table (Emp_no should be primary key).

(b) Write a SQL query to display Employee name and company name.

(c) Write a SQL query to display employee name, employee city, company name and salary of all the employees whose salary >10000

(d) Write a query to display all the employees working in 'XYZ' company.

21. Explain 3NF and BCNF with suitable example.

22. Examine the RAID system. How does it improve performance and reliability? Discuss the level 3 and level 4 of RAID.

23. When does dead lock occurs? Explain two-phase commit protocol with example.

24. What is a parallel system in a database? Discuss.

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