

Register No: .....

Name: .....

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)
(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)
EIGHTH SEMESTER INTEGRATED MCA DEGREE EXAMINATION(R), MAY 2024
(2020 SCHEME)

Course Code : 20IMCAT402

Course Name : Advanced Database Management Systems

Max. Marks : 60

Duration:3 Hours

PART A

(Answer all questions. Each question carries 3 marks)

- 1. List the differences between DBMS and file processing system.
2. Describe the distinction between specialization and generalization.
3. What is a join dependency in the context of database design? How does it differ from other types of dependencies?
4. Explain partial dependency with an example.
5. What is a timestamp in the context of a DBMS? How is it used to manage concurrency?
6. What is the role of the scheduler in a database management system?
7. Explain parsing and translation in query processing.
8. Give a brief note on dynamic hashing.
9. What is a multiset type in SQL? How is it different from an array type?
10. Compare and contrast a heterogeneous database with a homogeneous distributed database, highlighting their respective strengths and weaknesses.

PART B

(Answer one full question from each module, each question carries 6 marks)

MODULE I

- 11. Explain the different operations in relational algebra with examples. 6

OR

- 12. How does an Entity-Relationship Model facilitate the understanding of data structures and relationships within a database system? 6

MODULE II

- 13. In what ways does normalization support scalability and flexibility in database systems? 6

OR

- 14. What is normalization? Explain about 1NF, 2NF and 3NF. 6

MODULE III

- 15. Explain the concept of a growing phase and a shrinking phase in the Two-Phase Locking protocol. How do these phases help maintain transaction consistency? 6

OR

- 16. What is transaction recovery in the context of database management systems? Why is it essential for ensuring data consistency and integrity? 6

MODULE IV

- 17. With neat sketch, explain the structure of B+ tree. 6

OR

- 18. Compare and contrast RAID 0, RAID 1, RAID 2 and RAID 5 in terms of data protection, performance and storage efficiency. Give necessary diagrams. 6

MODULE V

- 19. Discuss the complex data types in detail. 6

OR

- 20. Give a comparison on HBase and Cassandra. 6

