Register No.: ....   Name: ....

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

SECOND SEMESTER MCA DEGREE EXAMINATION (R,S), MAY 2024

(2021 SCHEME)

Course Code: 21CA201

Course Name: Advanced Database Management Systems

Max. Marks: 60   **Duration: 3 Hours**

PART A

(Answer all questions. Each question carries 3 marks)

1. Explain generalization with an example.
2. With the help of a diagram, explain about three tier schema architecture.
3. Which are the common anomalies found in database?
4. Write a short note on BCNF.
5. Explain the ACID properties of a transaction and why they are important in database systems.
6. Describe time stamp.
7. Compare and contrast sequential file organization and indexed file organization.
8. Discuss the advantages and disadvantages of using B tree index files in a database system.
9. Explain CAP theorem.
10. Define collection and document in MongoDB.

PART B

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

MODULE I

11. Define and explain the role of a database administrator (DBA) in a database system.   (6)

OR

12. Draw an ER diagram for a university course registration system. Include entities such as Student, Course, Professor and Registration, and define the relationships and attributes needed to represent the system accurately.   (6)

MODULE II

13. Explain the axioms (inference rules) of functional dependencies.   (6)

OR

14. a) Discuss the role of join dependencies in database normalization.   (3)

b) Describe the concept of fifth normal form (5NF) in database normalization.   (3)

MODULE III

15. a) Define and explain deadlock. Describe the four necessary conditions for a deadlock.   (3)

    b) Discuss the techniques used to prevent deadlocks in a database system.   (3)

OR

16. Explain concurrency control with locking methods.   (6)

MODULE IV

17. Explain the different levels of RAID with a diagram.   (6)

OR

18. Describe the process of query processing in a database system with the help of a block diagram.   (6)

MODULE V

19. Describe the concept of distributed database in detail.   (6)

OR

20. Discuss about next generation databases.   (6)

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