

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

**SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)**

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**SECOND SEMESTER M.C.A DEGREE EXAMINATION (Regular), JULY 2022****(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. Differentiate instance and schema in DBMS with example.
2. Comment on referential integrity constraint.
3. Discuss any three anomalies found in databases.
4. Write note on join dependencies with suitable example.
5. Discuss the ACID properties of transaction.
6. What is the role of scheduler when transactions are executed concurrently?
7. Explain any three types of hashing techniques in DBMS.
8. Differentiate dense index and sparse index.
9. Write a short note on Cassandra.
10. State the CAP theorem related to NoSQL.

**PART B***(Answer one full question from each module, each question carries 6 marks)***MODULE I**

11. a) Write any six applications of DBMS. (3)  
b) Explain the different levels of data abstraction with a neat diagram. (3)

**OR**

12. a) Draw an E-R diagram of an employee database with entities Employee, Project, Department and Dependent. Relationship names must be meaningful and there should be an ISA relationship also in diagram. (4)  
b) Discuss the concept of aggregation with suitable example. (2)

**MODULE II**

13. Define functional dependency. Describe any four inference rules for functional dependencies. (6)

**OR**

14. What is the significance of normalization? Explain first three normal forms in detail. (6)

**MODULE III**

15. Explain the different ways to deal with deadlocks. (6)

**OR**

16. a) Is concurrency control important? Justify your answer. (3)  
b) What are the locking techniques for concurrency control? (3)

**MODULE IV**

17. With suitable diagrams describe the various levels of RAID technology. (6)

**OR**

18. a) Give the structure of B+ tree index files in DBMS. (3)  
b) Diagrammatically represent the basic steps in query processing. (3)

**MODULE V**

19. a) Explain the concept of table inheritance in object-based databases. (3)  
b) Discuss Sharding and Replication in MongoDB. (3)

**OR**

20. Comment on distributed databases and its types. (6)

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