Review CSS321

Test 1

1. What is a relation as related to Database Systems?
2. Describe any four operations related to relational algebra and any two operations related to relational calculus to database systems
3. Illustrate a typical example of the situation for a 5th normal form for database normalization to be achieved
4. Write SQL statement what will return the number of weeks elapsed from 25th August 2022 to 9th May 2024
5. Account for the role of JDBC in database management systems

Test 2

6. Mention any two examples of Object Oriented DBMS
7. Account for 3 advantages and 3 disadvantages of Object Oriented Databases
8. Explain how query tree and heuristics are used during query optimization
9. Draw a diagram representing a typical structure of CORBA application
10. Account for the role of DTD in XML Oriented Databases

Consider the XML document defined as: `<student id="S1"> <name> John </name> <age> 22</age><email>jhn@xyz.com</email> </student>`. Write down XPath for extracting the email of a student whose name is John.

Make up Test

11. Describe any eight operations related to relational algebra
12. Illustrate a typical example of the situation for a 4th normal form for database normalization to be achieved
13. Write short notes about embedded SQL

Classwork

14. Write short notes about the term relation as related to database management systems
15. Write short notes about the terms relational algebra and relational calculus as related to database management systems
16. Write short notes (with examples) about the key operations of relational algebra

a) Selection
b) Projection
c) Renaming
d) Union
e) Intersection
f) Difference
g) Cartesian product
h) Joins
i) Division

17. Write short notes about
18. Tuple Relational Calculus (TRC)
19. Domain Relational Calculus (DRC)
20. Account for the difference between Relational Algebra and Relational Calculus

Group Work

Write short notes related to Distributed Database Systems

21. Key concepts in Distributed Database Systems
22. Motives of Distributed Database Systems (DDS)
23. Advantages of Distributed Database Systems
24. Issues related to Distributed Database Systems including: a) Transparency b) Availability and Reliability c) Scalability, d) Partition Tolerance and e) Autonomy
25. Techniques and illustrations (with a typical example) for Distributed Database Design related to: a) Data Fragmentation, b) Replication, and c) Allocation
26. Concurrency control techniques in Distributed Database Systems
27. Distributed recovery mechanisms (methodologies and algorithms) in the event of disaster as related to DDS
28. Distributed Database Architecture