

R16

Code No: 134AP

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech II Year II Semester Examinations, September/October - 2023

DATABASE MANAGEMENT SYSTEMS

(Common to CSE, IT)

Time: 3 Hours

Max. Marks: 75

Note: i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

- 1.a) Define data independence. [2]
- b) Illustrate class hierarchies in ER model. [3]
- c) What is an active database? [2]
- d) Give the basic form of SQL query. [3]
- e) Define functional dependency. [2]
- f) List Armstrong's inference rules. [3]
- g) What is an intention lock? [2]
- h) Give failure classification. [3]
- i) What is a heap file? [2]
- j) What is multi-level indexing? [3]

PART – B

(50 Marks)

- 2.a) What are the functionalities and responsibilities of database administrator?
- b) Compare database system with information retrieval system. [5+5]

OR

3. What is an integrity constraint? Explain various types of integrity constraints and their enforcement by DBMS. [10]

4. Consider the following database schema to write queries in Relational Algebra:

Supplier(sno, sname, city)

Parts(Pid, name, color)

Supply(sno, pid, price)

- a) Find the names of the parts supplied by Hyderabad suppliers.
- b) Find the names of the suppliers who supply Blue colored blenders.
- c) Find the names of the suppliers who supply Grills for cheapest price. [10]

OR

- 5.a) Demonstrate the use of aggregate operators in SQL.
- b) What is a nested query? What are its advantages? Explain with an example. [10]



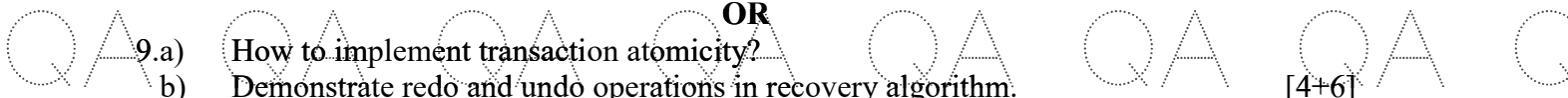
6. Discuss the problems caused due to redundancy and suggest mechanisms to reduce redundancy. [10]



7.a) **OR** Compare and contrast 3NF with BCNF. [4+6]
b) With examples, explain the properties of decomposition.

8.a) Compare two phase locking protocol with time stamp based protocol for concurrency control.

b) Explain time-stamp based protocol for concurrency control. [5+5]



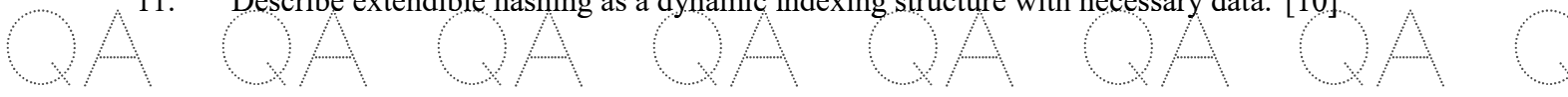
9.a) **OR** How to implement transaction atomicity? [4+6]
b) Demonstrate redo and undo operations in recovery algorithm.

10.a) How does data get stored on a magnetic disk? Explain with a suitable diagram.

b) Explain search operation of a B⁺ tree with an illustrative example. [5+5]

OR

11. Describe extendible hashing as a dynamic indexing structure with necessary data. [10]



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