Code No: 134AP **R16**

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 Hyderabadi 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]

OR

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

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]

OR

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

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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