

Code No: 154AM**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech II Year II Semester Examinations, August/September - 2021****DATABASE MANAGEMENT SYSTEMS****(Common to CSE, IT, ITE)****Time: 3 Hours****Max. Marks: 75****Answer any five questions
All questions carry equal marks**

- 1.a) Discuss about levels of abstraction in a DBMS.
b) What is a data model? What are the different data models? Explain. [7+8]
- 2.a) Define ER model and explain the following kinds of constraints that can be specified in the ER diagram, and give an example of each: i) key constraint ii) participation constraint.
b) Discuss the functionality of query evaluation engine. [8+7]
- 3.a) Discuss in detail about the properties of relation algebra.
b) Compare tuple relational calculus and domain relational calculus. [7+8]
4. Consider the following relations
Sailors (sid, sname, rating, age)
Boats (bid, bname, color)
Reserves (sid, bid, day)
Write the statements in Relational Algebra, Relational Calculus, Domain Relational Calculus and SQL for the following questions.
a) Find the names of sailors who have reserved a Red boat.
b) Find the names of sailors who have reserved at least one boat.
c) Find the names of sailors who have reserved a Red and a Green boat.
d) Find the names of sailors who have reserved a Red or a White boat.
e) Find the names of sailors who have reserved all boats. [15]
- 5.a) What are the steps to be followed to convert a relation in 3NF to BCNF?
b) Discuss the importance of entity integrity and referential integrity constraints. [8+7]
- 6.a) When is the decomposition of a relation schema R into two relation schemas X and Y said to be lossless-join decomposition? Why is this property so important? Give a necessary and sufficient condition to test whether a decomposition is lossless-join.
b) Discuss fourth normal form with illustration. [8+7]
- 7.a) Discuss in detail about timestamp based concurrency control techniques.
b) Write about Log based recovery. [8+7]
- 8.a) State and explain various file organization methods. Give suitable examples to each of them.
b) What are the Pros and Cons of ISAM? [8+7]

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