

R18

Code No: 157BD

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, July/August - 2023

DATABASE MANAGEMENT SYSTEMS

(Electronics and Communication Engineering)

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) What are the goals of DBMS? [2]
- b) Define weak and strong entity sets in ER Model. [3]
- c) Explain the concepts of a Primary key and Foreign Key. [2]
- d) Explain tuple relational calculus. [3]
- e) What are the conditions required for a relation to be 3NF? [2]
- f) What is the use of the DROP command and what are the differences between DROP and DELETE commands? [3]
- g) Define Checkpoints. [2]
- h) What is the serializability of transactions? [3]
- i) Define Tree Indexing. [2]
- j) Discuss the Primary and Secondary indexes. [3]

PART – B

(50 Marks)

- 2.a) What is DBMS? Compare the features of File Systems and Database Systems? [4+6]
 - b) Draw an ER-Diagram for Library management system. [4+6]
- OR**
- 3.a) Write short-notes on the following:
i) Instances ii) View of Data iii) Data Abstraction? [5+5]
 - b) What is E-R Model? Discuss additional features of the ER-Models. [5+5]
- 4.a) What is a view? How to create a view? What are the uses of view? [4+6]
 - b) What is Relational Model? Explain about various domain and integrity constraints in Relational Model with examples. [4+6]
- OR**
- 5.a) Explain various set operations in Relational algebra with an example. [4+6]
 - b) Let $R = (ABC)$ and let r_1 and r_2 both relations on schema R . Give an expression in the domain relational calculus that is equivalent to each of the following. [4+6]

- i) $\prod_A (r_1)$ ii) $\sigma_{B=17}(r_1)$ iii) $r_1 \cap r_2$

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6.a) Explain various set operations used in SQL with examples.

b) Explain how to implement triggers in SQL with example. [5+5]

OR

7.a) Explain the following Operators in SQL with examples:

i) UNION ALL ii) NOT IN iii) SELECT iv) TRUNCATE

b) What is Normalization? What are the conditions are required for a relation to be in 4NF and 5NF? Explain with examples. [5+5]

8.a) Explain about conflict serializability and view serializability with examples.

b) Explain how the Validation-based locking protocols is used in Concurrency Control?

[5+5]

OR

9.a) Explain how the Two Phase Locking protocol is used in Concurrency Control.

b) Explain the check point log based recovery scheme for recovering the database. [5+5]

10.a) Discuss about data on External storage.

b) Illustrate insertion and deletion of an element in B+ trees with example. [4+6]

OR

11.a) What are the difference between *ISAM* and *B+ trees* Indexes?

b) Explain Deletion and insertion operations in *ISAM* with examples. [4+6]

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