

Code No: 157BD

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, January/February - 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 is data abstraction in DBMS? [2]
- b) How to represent the Role and Strong entity set in E-R model? [3]
- c) Define the structure of a (well-formed) formula for tuple relational calculus. [2]
- d) What is the difference between super key and candidate key in a relation? [3]
- e) Define functional dependencies. [2]
- f) Differentiate between DROP, TRUNCATE and DELETE commands in SQL. [3]
- g) What is an isolation transaction? [2]
- h) What is check pointing in data base recovery? [3]
- i) Explain various types of locks along with their compatibility functions. [2]
- j) Define hashing with example. [3]

PART – B**(50 Marks)**

- 2.a) Compare and contrast file Systems with database systems.
- b) What is Data model? Discuss about ER Model and Relational model. What is data independence and how does a DBMs support. [5+5]

OR

- 3.a) Define generalization, specialization and aggregation. How it is represented in E-R Model?
- b) Describe the Structure of DBMS. [5+5]
- 4.a) Let $R=(ABC)$ and $S=(DEF)$ let $r(R)$ and $s(S)$ both relations on schema R and S . Give an expression in the Tuple relational calculus that is equivalent to each of the following.
i) $\prod A1,(r)$ ii) $\sigma p=19(r)$ iii) rXs iv) $\prod A,F,(\sigma C=D(rXs))$.
- b) Explain Domain relational calculus with example. [5+5]

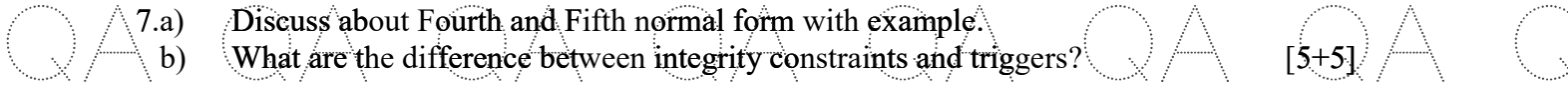
OR

- 5.a) Discuss various join operations in relational algebra operators with example.
- b) Explain various Relational Integrity Constraints. [5+5]



- 6.a) Explain what are the problems caused by redundancy and decomposition of relation.
- b) Explain the following operators in SQL with examples:
 - i) UNION ALL ii) NOT IN iii) UNION iv) EXCEPT. [4+6]

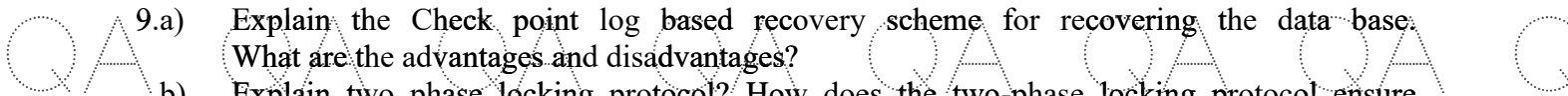
OR



- 7.a) Discuss about Fourth and Fifth normal form with example.
- b) What are the difference between integrity constraints and triggers? [5+5]

- 8.a) What is log file? Explain the following log based recovery schemes.
 - i) Deferred data base modification ii) immediate data base modification
- b) Explain about validation based protocol with example. [6+4]

OR



- 9.a) Explain the Check point log based recovery scheme for recovering the data base. What are the advantages and disadvantages?
- b) Explain two phase locking protocol? How does the two-phase locking protocol ensure the serializability? [5+5]

- 10.a) What is indexing? Explain the cluster index, primary and secondary indexes with examples.
- b) Explain about file organization in detail. [5+5]

OR



- 11.a) Describe the insertion and deletion Operations in B+ trees with examples
- b) What are the differences between ISAM and B+ tree indexes? Explain. [5+5]

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