

NATIONAL INSTITUTE OF TECHNOLOGY, KURUKSHETRA

THEORY EXAMINATION

Question Paper

ROLL NO. _____

Month and Year of the Examination: **December 2018**Programme: **B.Tech. (IT)**Semester: **3rd**Subject: **Database Systems**Course No.: **ITPC 25**Maximum Marks: **50**Number of Questions to be attempted: **5**Time allowed: **3 Hours**Total No. of Questions: **6**Total No. of Pages used: **1**

Que1. (a)	Describe the three-schema architecture. Why do we need mappings between schema levels? How do different schema definition languages support this architecture	(5)
(b)	Explain schemas, instances and data model types with examples.	(5)
Que2. (a)	What is a minimal set of functional dependencies? Does every set of dependencies have a minimal equivalent set? Is it always unique?	(5)
(b)	What do you mean by conflict serializability describe types of schedules ?	(5)
Que3 .(a)	Explain timestamp value and properties of transaction with example ?	(5)
(b)	Describe two phase commit and deadlock and starvation ?	(5)
Que4 (a)	Suppose that we have a relation Marks (student-id, score) and we wish to assign grades to students based on the score as follows: grade F if score < 40, grade C if $40 \leq \text{score} < 60$, grade B if $60 \leq \text{score} < 80$, and grade A if $80 \leq \text{score}$. Write SQL queries to do the following : i. Display the grade for each student, based on the marks relation. ii. Find the number of students with each grade.	(5)
(b)	Explain concurrency control and two phase locking with example ?	(5)

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Que5.	<p>(a) What is meant by a recursive relationship type? Give some examples of Recursive relationship types.</p> <p>(b) A database is being constructed to keep track of the teams and games of a sports league. A team has a number of players, not all of whom participate in each game. It is desired to keep track of the players participating in each game for each team, the positions they played in that game, and the result of the game.</p> <p><i>Design an ER schema diagram for this application, stating any assumptions you make. Choose your favorite sport (e.g., soccer, baseball, football). Also define the mapping of conceptual schema to logical schema.</i></p>	
Que6.	<p>Write short note on following topics:-</p> <ul style="list-style-type: none">• Comparison between BCNF , 3NF, 2NF• Domain and tuple relational calculus with example <p>or</p> <p>Comparison between embedded and dynamic SQL</p>	<p>(5)</p> <p>(5)</p>