

2055

M.E. (Information Technology)

Second Semester

MEIT-2203: Advanced Database Management System

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Part.

x-x-x

I	a) Briefly discuss data independence and its types. b) Differentiate between pessimistic and optimistic concurrency control. c) How does MINUS operator differ from INTERSECT operator? Discuss in brief. d) What is the difference between an implicit cursor and an explicit cursor in PL/SQL? e) What is NoSQL? How does it differ from relational databases?	(02) (02) (02) (02) (02)
	PART A	
II	a) Explain and differentiate between DDL, DML and DCL statements. b) What are the key challenges in concurrency control in distributed database systems? Discuss.	(06) (04)
III	a) What is Third Normal Form (3NF)? Provide a suitable example of a relation that is in Second Normal Form (2NF) but not in 3NF. Decompose this relation into 3NF and explain the process. Also discuss the anomalies that may occur if the relation is not decomposed into 3NF. b) What do you understand by aggregate functions? Discuss the utility of any four aggregate functions with the help of suitable examples.	(05) (05)
IV	a) What is Two-Phase Locking (2PL) protocol? Briefly discuss its working, advantages and disadvantages. b) Consider the following table: Employee (emp_id, emp_name, department, salary, hire_date, city) Write SQL queries for the following: i) Retrieve the names and salaries of employees working in the IT department. ii) Fetch all employee details, sorting the results by salary in descending order. iii) Display the average salary of employees in each department, but only for departments where the average salary exceeds 50,000. iv) Retrieve the list of employees whose names start with 'A'. Appropriately assume any required information yourself.	(05) (05)
	PART B	
V	a) Write PL/SQL code to demonstrate the utility of a Trigger. Appropriately assume any required information yourself. b) Explain deferred update recovery technique highlighting its advantages and disadvantages.	(05) (05)
VI	a) Explain the concepts of ROLLBACK and SAVEPOINT in PL/SQL with the help of an example. How do these commands contribute to effective transaction control? Discuss. b) Discuss the syntax and utility of insertOne() and insertMany() methods in MongoDB with the help of suitable examples.	(05) (05)
VII	a) Write a note on the installation and key features of MongoDB. b) What is shadow paging? Discuss its working with the help of a diagram.	(05) (05)

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