

July Aug May June 2025

B. Tech Program: Computer Engineering
Supplementary Examination: SY

Scheme I/II/IIB/III: IIB
Semester: IV

Course Code: CEC403 and

Course Name: Database Management System

Date of Exam: ~~23/05/25~~

Duration: 02.5 Hours

Max. Marks: 60

01-08-25

Instructions:

- (1) All questions are compulsory.
- (2) Draw neat diagrams wherever applicable.
- (3) Assume suitable data, if necessary.

Q. No.	Question	Max. Marks	CO	BT level
Q 1	Solve any two questions out of three: (05 marks each)	10		
a)	What is DBA? Illustrate the Role of Database Administrator (DBA) user?		CO1	U
b)	Define Views in SQL? Explain with examples.		CO4	U
c)	Explain Different types of keys with suitable examples.		CO3	U
Q 2	Solve any two questions out of three: (05 marks each)	10		
a)	Explain functional dependency and its different types with suitable examples.		CO5	U
b)	Explain Log-Based recovery.		CO6	U
c)	Explain Generalization & Specialization concepts in EER?		CO2	U
Q.3	Solve any two questions out of three. (10 marks each)	20		
a)	Explain Following Relational Algebra Operators with example. a) select b) Set Difference c) Theta Join d) Project e) Rename		CO3	U
b)	Describe the concept of serializability in database transactions. Explain Conflict and View serializability with the help of Example. Evaluate the effectiveness of view serializability as compared to conflict serializability.		CO6	Ap

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c)	<p>Consider the following employee database and write SQL queries for the following (02 Marks each)</p> <p>Employee (<u>emp_name</u>, street, city, date_of_joining) Works(<u>emp_name</u>, <u>company_name</u>, salary) Company (<u>company_name</u>, city) Manager (<u>emp_name</u>, <u>manager_name</u>)</p> <ol style="list-style-type: none">1. Display all employees who joined in the month of "March".2. Modify the database so that "Rohit" now lives in "Mumbai".3. Give all employees of "Small Bank corporation" a 10% raise in salary4. Find all employees who earn more than average salary of all the employees of their company5. Find an employee name whose name starts with letter S.			CO4	Ap
Q.4	Solve any two questions out of three. (10 marks each)	20			
a)	<p>Draw an E-R diagram for university database consisting of 4 entities: (i) Student (ii) Class (iii) Department (iv) Faculty and convert it to tables.</p> <ul style="list-style-type: none">• Students have a unique id, the students must enroll for multiple classes and have at most one major in the department.• Many Faculty belong to one department and many faculties can take multiple classes.• Every student will get a grade for the class he/she has enrolled.			CO2	Ap
b)	Explain the need for normalization and describe 1NF, 2NF, 3NF, and BCNF with examples.			CO5	U
c)	Describe how Timestamp-Based Concurrency Control Protocol handles read and write operations. Support your explanation with a conflicting transaction example.			CO6	U