



CUMMINS COLLEGE OF ENGINEERING FOR WOMEN

**(An Autonomous Institute affiliated to Savitribai Phule Pune
University)**

Third Year Electronics & Telecommunication DATABASE MANAGEMENT SYSTEMS (SWAYAM ONLINE) (PEEC3201E)

Duration : 02:00 Hours

Max Marks : 50

Instructions :

1. All questions are compulsory.
2. Use of scientific calculator is allowed.
3. Draw diagrams wherever necessary.

Unit-1

Q No 1 a)

(5)

Levels of abstraction simplify user's interaction with the system. Support this statement with a brief discussion and a suitable diagram.

Unit-2

Q No 2 a)

(5)

Discuss the Web application architecture. What is the significance of MVC?

Unit-3

Q No 3 a)

(5)

Caching could be used to speed up the web server performance. Explain the ways in which this could be done, in brief.

Unit-4

Q No 4 a)

(5)

Discuss the factors that govern the selection of physical storage medium to look in from the perspective of a database application.

Unit-5

Q No 5 a)

(5)

Considering the following SQL query:

select dept_name, building, budget, ID, name, salary
from department **natural join** instructor;

Show the relations that made up the following multitable clustering file structure

Comp Sci	Taylor	100000
45564	Katz	75000
10101	Srinivasan	65000
83821	Brandt	90000
Physics	Watson	70000
33456	Gold	85000

Unit-6

Q No 6 a)

(5)

Elaborate on the four significant properties that a database should adhere to while dealing with transactions.

Unit-7

Q No 7 a)

(5)

Write a single transaction that transfers \$100 from account B to account A and then transfers 10% of the balance of account B to account A, adhering to the ACID properties.

[Given: Before the transactions; account A and account B have \$2000 and \$1000 respectively]

Unit-8

Q No 8 a)

(5)

Mention the reasons as to why concurrency is preferred. Let T1 and T2 be the two transactions. Transaction T1 transfers \$100 from account A to account B, whereas transaction T2 transfers 10% of the balance from account A to account B.

Assuming a serial scheduling scenario, write the transactions in the order:

- a) T1 followed by T2
- b) T2 followed by T1

Compare the results and comment on its consistency.

[Given: Prior to the transactions; account A and account B have \$1000 and \$500 respectively]

Unit-9

Q No 9 a)

(5)

Let A and B be two accounts that are accessed by transactions T1 and T2.

a) Make a serial schedule and write transaction T1, that transfers \$50 from account B to account A.

b) Make a serial schedule and write a transaction T2, that displays the total amount in the accounts A and B (i.e A+B).

NOTE: Make use of locks for these transactions to ensure Isolation.

[Given: Prior to the transactions; account A and account B have \$1000 and \$500 respectively]

Unit-10

Q No 10 a)

(5)

Discuss the types of failures in a database system in brief.
Why the recovery system is considered significant?