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)

What are mapping cardinalities and why are they used? Discuss their types in brief with suitable diagrams.

Unit-2

Q No 2 a) (5)

What are the Mobile App constraints? Illustrate the typical architecture of a mobile app with a suitable diagram.

Unit-3

Q No 3 a) (5)

Discuss the role of Application security measures in a database system.

Unit-4

Q No 4 a) (5)

From the perspective of a database application, what are the factors that govern the selection of a physical storage medium?

Unit-5

Q No 5 a) (5)

Given 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

ECE	Martin	100000
45564	Oliver	75000
10101	Srinivasan	65000
83821	Brandt	90000
Physics	Verma	70000
33456	Patrick	85000

Unit-6

Q No 6 a) (5)

A database system should maintain certain properties of transactions. Elaborate on them in brief.

Unit-7

Q No 7 a) (5)

With reference to a simple transaction model:

a) Write a transaction that transfers Rs.50 from account A to account B, adhering to the ACID properties.

b) Show a condition in the transaction that can be termed as an Inconsistent state.

[Given: Before the transactions; account A and account B have Rs.1000 and Rs.2000 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)

With reference to the schedule given below:

T1	**T2**	**T3**
read(A)		
read(B)		
write(A)		
	read(A)	
	write(A)	
		read(A)
abort		

Explain the sequence of these transactions.

What will happen if T1 fails after the read(A) transaction in T3?

What is this phenomenon called and what should be done to avoid such scenarios?

Unit-10

Q No 10 a) (5)

Elaborate on query processing in a database system. Explain the steps involved in it with a suitable diagram.