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PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations –MAY 2025

Date: 26-05-2025

Time: 01:00 pm – 04:00 pm

School: SOIS	Program: BCA	
Course Code: CSA3023	Course Name: ADVANCED DATABASES	
Semester: IV	Max Marks: 100	Weightage: 50%

CO – Levels	C01	C02	C03	C04	C05
Marks	20	30	30	20	-

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks.

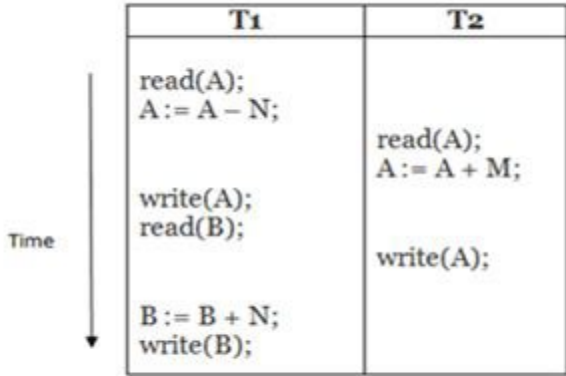
10Q x 2M=20M

1.	How does timestamp-based concurrency control work?	2 Marks	L1	C01
2.	Which are the different languages supported by MongoDB?	2 Marks	L1	C01
3.	Is MongoDB better than other SQL databases? If yes then how?	2 Marks	L2	C02
4.	Why is the durability property important in transactions?	2 Marks	L2	C02
5.	Mention few differences between SQL and NOSQL?	2 Marks	L2	C01
6.	Is MongoDB better than other SQL databases? If yes then how?	2 Marks	L1	C02
7.	What is a serial schedule?.	2 Marks	L1	C01
8.	List out the characteristics of distributed databases.	2 Marks	L1	C02
9.	Why is the durability property important in transactions?	2 Marks	L1	C01
10.	Mention the features of parallel databases.	2 Marks	L1	C04

Part B

Answer the Questions.

Total Marks 80M

11.	a.	<p>Perform testing of serializability for the above transaction and identify the type of schedule.</p> <div style="text-align: center;">  <p>Schedule C</p> </div>	10 Marks	L2	CO4
	b.	Compare and contrast ACID and BASE properties with respect to database transactions. Provide examples where BASE is more suitable than ACID.	10 Marks	L2	CO2
Or					
12.	a.	Draw ER diagram for Banking systems.	10 Marks	L1	CO2
	b.	Explain the features of NoSQL databases. Compare the different data models used in NoSQL architectures.	10 Marks	L1	CO1
13.	a.	NoSQL databases always prioritize Consistency over Availability. Justify	10 Marks	L2	CO3
	b.	Explain database sharding in NoSQL. How does it achieve horizontal scalability? Discuss its advantages and limitations	10 Marks	L1	CO3
Or					
14.	a.	Explain loosely coupled systems, characteristics of distributed databases, local and global views, types of distributed processing, data storage techniques including replication and fragmentation, and compare centralized and distributed databases.	20 Marks	L1	CO3
15.	a.	<p>A hospital wants to store patient records in a NoSQL database.</p> <ol style="list-style-type: none"> 1. Insert the following document into a MongoDB collection named patients: 2. Retrieve all patient records where the disease is "Fever" from the patients collection. 3. The hospital wants to update John Doe's age from 32 to 33. Update his record in the patients collection. 4. Remove the patient record where PatientID is 101. 5. Retrieve all patients who have either "Diabetes" or "Flu" as their disease. 	10 Marks	L3	CO4

	b.	With reference to a NoSQL system like MongoDB or Cassandra, explain how NoSQL databases handle distributed architecture and data consistency.	10 Marks	L3	C03
Or					
16.	a.	A Employee table contains Empid, Ename, Esalary, Eage, Edept. 1. Find all employees who work in IT department 2. Find Employees whose salary is between 30000 -50000 3. Count the number of employees in each department 4. Write an SQL query to display the total salary given in each department using the GROUP BY clause. 5. Find max salary and Average salary of employees.	10 Marks	L3	C04
	b.	Explain the concepts of horizontal and vertical fragmentation in distributed databases with suitable examples.	10 Marks	L2	C02

17.	a.	Explain the features of parallel databases and describe the three types of parallel architectures. Mention the advantages of each.	20 Marks	L1	C03
Or					
18.	a.	Explain Shared Memory with neat diagram.	10 Marks	L1	C02
	b.	Discuss the advantages and disadvantages of parallel databases. How do they differ from distributed databases?	10 Marks	L2	C03