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**PRESIDENCY UNIVERSITY  
BENGALURU**

**SET-A**

**SCHOOL OF ENGINEERING  
END TERM EXAMINATION –MAY/JUNE 2024**

**Semester :** Semester VI-2023-24-BCA - 2021

**Date :** MAY 31-2024

**Course Code :** CSA3023

**Time :** 9:30 AM-12:30 PM

**Course Name :** Advanced Data Bases

**Max Marks :**100

**Program :** BCA

**Weightage :** 50%

- Note:**
- 1. Answer ALL 5 FULL Questions.**
  - 2. Each Full Question carries 20 Marks**
  - 3. Scientific and non-programmable calculator are permitted.**
  - 4. Do not write any information on the question paper other than Roll Number.**

- 1.a. Explain concurrency control with Lock-based protocol. [Knowledge] (C01) (04 Marks)
- 1.b. Elaborate the following with an example of each (a) Serial schedule (b) Non-serial schedule (c)Serializable schedule [Comprehension] (C01) (06 Marks)
- 1.c. Explain concurrency control with Time-stamp based protocol. [Application] (C01) (10 Marks)
- or**
- 2.a. How serialization Graph is used to test the Serializability of a schedule. Elaborate with taking an example with at least 3 transactions. [Knowledge] (C01) (04 Marks)
- 2.b. Explain conflict equivalent schedules with an example. [Comprehension] (C01) (06 Marks)
- 2.c. Check whether the given schedule S is conflict serializable or not. If yes, then determine all the possible serialized schedules-S: R4(A), R2(A), R3(A), W1(B), W2(A), R3(B),W2(B) [Application] (C01) (10 Marks)
- 3.a. How NOSQL databases are different from RDBMS? [Knowledge] (C02) (04 Marks)
- 3.b. Explain sharding with an example. [Comprehension] (C02) (06 Marks)

3.c.	State CAP theorem. How it can be used to explain some of the competing requirements in distributed system with replication [Application]	(C02)	(10 Marks)
<b>OR</b>			
4.a.	List different types of NOSQL databases. Explain characteristics of each. [Knowledge]	(C02)	(04 Marks)
4.b.	When should we use NOSQL database instead of RDBMS? Explain. [Comprehension]	(C02)	(06 Marks)
4.c.	Discuss the advantages and disadvantages of various types of NOSQL databases. [Application]	(C02)	(10 Marks)
5.a.	List different ways in which fragmentation of a relation can be done. Explain. [Knowledge]	(C03)	(04 Marks)
5.b.	Explain different naming criteria in distributed databases. [Comprehension]	(C03)	(06 Marks)
5.c.	Discuss the circumstances & reasons when & why an organization with a centralized database system would prefer to move onto a distributed database environment. What are the possible disadvantages such a decision? [Application]	(C03)	(10 Marks)
<b>OR</b>			
6.a.	List different ways in which data can be stored on different sites? Explain. [Knowledge]	(C03)	(04 Marks)
6.b.	Explain distributed transactions with an example. [Comprehension]	(C03)	(06 Marks)
6.c.	Explain 3 phase commit protocol with reference to distributed transactions. [Application]	(C03)	(10 Marks)
7.a.	Explain different types of Parallel databases architecture? [Knowledge]	(C04)	(04 Marks)
7.b.	Define parallel databases? Explain advantages & disadvantages of parallel databases. [Comprehension]	(C04)	(06 Marks)
7.c.	Explain intra-parallelism and inter-parallelism with reference to query processing. [Application]	(C04)	(10 Marks)
<b>OR</b>			
8.a.	Differentiate between speedup and scale-up in parallel databases. [Knowledge]	(C04)	(04 Marks)
8.b.	How concurrency control is implemented in distributed database systems. [Comprehension]	(C04)	(06 Marks)
8.c.	Explain how availability is ensured in distributed databases? [Application]	(C04)	(10 Marks)

- 9.a List 4 authentication commands that you can apply on 'Student' Database. give example of each. **[Knowledge]** (C03) (04 Marks)
- 9.b Define mongo DB replication. Explain how it works? **[Comprehension]** (C03) (06 Marks)
- 9.c Explain recovery and concurrency control in distributed database systems. **[Application]** (C03) (10 Marks)
- Or**
- 10.a List the advantages and disadvantages of shared memory. **[Knowledge]** (C04) (04 Marks)
- 10.b Explain the advantages of parallel databases over centralized databases. **[Comprehension]** (C04) (06 Marks)
- 10.c Compare & contrast a distributed DBMS with parallel DBMS. Under what circumstances you would choose a distributed DBMS over parallel DBMS? **[Application]** (C04) (10 Marks)