SHAMBHUNATH INSTITUTE OF ENGINEERING & TECHNOLOGY

Subject Code: BCS-501

Course: B.Tech.

Subject: DBMS

Semester: 5th

SECOND SESSIONAL EXAMINATION, ODD SEMESTER, (2024-2025)
Branch: Computer Science & Engineering

Time–2HR

Maximum Marks–45

1. Attempt any FIVE questions

QN	QUESTION	Marks	CO	BL
a.	What do you mean by normalization?	2	CO3	L2
b.	What Trivial and non-trivial functional dependency?	2	CO3	L2
	What do you mean by multivalued dependency (MVD).	2	CO3	L1
	List all prime and non prime attribute in Relation R(A,B,C,D,E) with FD set $F=\{A \to CD, C \to B, B \to AE\}$.	2	CO3	L4
	What is difference between 3rd normal form and BCNF?	2	CO3	L2
	What do you mean by join dependency?	2	CO3	L1

Attempt any ONE of the following.

QN	QUESTION	Marks	CO	BL
a.	What is normalization? What are the conditions are required for a relation to be in 2NF, 3NF and BCNF explain with examples.	5	CO3	L4
b.	A relational Schema R (A, B, C, D, E) and FDs are $AB \to C$, $B \to E$, $C \to D$ what are the candidate key of R? Relation is in 2nd Normal Form if yes Verify your answer if not convert it into 2nd Normal Form	5	CO3	L4
c.	Define lossless join composition. Consider the relation R(A,B,C,D,E) and the set of FDs $F=(AB \to CD, A \to E, C \to D, C \to E$, and determine whether the decomposition R1(A,B,C), R2(A,B,C,D), R3(C,D,E). Is LOSSY or LOSSLESS join decomposition?	5	CO3	L3

3. Attempt any FIVE questions:

QN	QUESTION	Marks	CO	BL
a.	What do you mean by transaction?	2	CO4	L1
b.	What is the importance of log?	2	CO4	L1
c.	What are distributed databases?	2	CO4	L1
d.	What do you mean by serializability?	2	CO4	L1
e.	Describe how view serializability is related to conflict serializability.	2	CO4	L2
f.	What are various reasons for transaction failure?	2	CO4	L2

4. Attempt any ONE of the following.

QN	QUESTION	Marks	CO	BL
a.	List ACID properties of transaction. Explain the usefulness of each.	5	CO4	L2
b.	What is Conflict Serializable Schedule? Check the given schedule S1 is Conflict Serializable or not? S1:R1(X), R2(X), R2(Y), W2(Y), R1(Y), W1(X).	5	CO4	L4
c.	Explain Deadlock Handling with suitable example.	5	CO4	L2

5. Attempt any FIVE questions

QN	QUESTION	Marks	CO	BL
a.	Distinguish between Shared and Exclusive Locks?	2	CO5	L3
b.	Why is concurrency control needed?	2	CO5	L2
c.	Define timestamp.	2	CO5	L1
d.	What is the concept of multiple granularities?	2	CO5	L1
e.	Why is concurrency control needed? dirty write?	2	CO5	L3
f.	Define recoverable and non recoverable schedule.	2	CO5	L2

6. Attempt any ONE of the following:

QN	QUESTION	Marks	CO	BL
a.	What are two phase locking protocol? Describe the help of example.	5	CO5	L2
b.	Discuss the time stamp ordering protocol for concurrency control.	5	CO5	L3
c.	Explain validation based protocol for concurrency control.	5	CO5	L2