

		involving nested query, natural join, aggregate function, HAVING clause and self join using the database tables.	(10)
		(ii) List the steps involved in establishing database connectivity with any backend database and front end tool.	(6)
13.	a)	(i) Define 1NF, 2NF and 3NF. Justify the need for using 2NF and 3NF over 1NF.	(6)
		(ii) Consider a Student Course Enrollment system which allows students to register for various courses handled by different faculty in a semester. The course may also be offered by different departments. Identify the relational tables and show that the database design satisfies 3NF.	(10)
(OR)			
	b)	(i) Justify the need for BCNF over 3NF with an example.	(8)
		(ii) What is multi-valued dependency? How does 4NF overcomes this? Explain.	(8)
14.	a)	(i) What is serializable transaction? How to ensure that a transaction does not have conflict serializability?	(8)
		(ii) What is concurrency in a database system? Explain the role of 2-phase locking protocol in concurrency control.	(8)
(OR)			
	b)	(i) Discuss the architecture of a Distributed database system. List and explain the various fragmentations supported in distributed database system.	(8)
		(ii) Explain the architecture of a data warehouse. How does a data warehouse differ from conventional database system? Explain.	(8)
15.	a)	(i) What is RAID technology? Explain the significance of various levels of RAID technology.	(8)
		(ii) What is B+ tree? What is the impact of B+ tree in a relational database system? Explain.	(8)
(OR)			
	b)	(i) Define static and dynamic hashing? Discuss the role of hashing techniques in relational database systems.	(8)
		(ii) Explain the query cost estimation for a simple join query in a relational database system.	(8)

