

12. (a) Consider the database schema
 Emp(emp-name, type, birthday, set of(Exam-names), set of (Skills))
 Children(emp-name, ch-name, birthday)
 Skills(type, set of (exam-names))
 Exams(exam-name, year, city)
 Write SQL statements for the following queries.
- (i) Find the names of all employees who have a birthday in March as their children.
 - (ii) Find those employees who took an examination for the skill type "typing" in the city "Chennai".
 - (iii) List all exam names under specific skill type for the given employee other than his exam names.
 - (iv) Find the names of the city and year where the examination is going to held for the given skill type. (8)
 - (v) Explain referential integrity with an example. (8)

Or

- (b) What is the need for building distributed database? Explain important issues in building distributed database with an example. Explain how distributed database is used in client/server environment. (16)

13. (a) (i) What is redundant data? What are the problems caused by redundant data? (6)
 (ii) Explain the process of normalization from 1NF to BCNF stage with example. (10)

Or

- (b) Consider the relation R(A, B, C, D, E) with functional dependencies. {A → BC, CD → E, B → D, E → A} Identify Super keys. Find Fc, F+. (16)

14. (a) Explain the following :
 (i) Different locking mechanism used in lock based concurrency control. (10)
 (ii) Validation based protocol with an example. (6)

Or

- (b) (i) What is the difference between conflict serializability and view serializability? Explain in detail with an example. (12)
 (ii) Briefly explain ACID property with an example. (4)

15. (a) What is RAID? Briefly explain different levels of RAID. Discuss the factors to be considered in choosing a RAID level. (16)

Or

- (b) (i) Explain three kinds database tuning in detail. (6)
 (ii) Explain the structure of B+ tree and how to process queries in B+ tree. (10)