Q. P. Code: 18323

Time: 3 Hours Marks: 80

N.B. : (1) Question Number 1 is compulsory

(2) Solve any three question from the remaining questions

(3) Make suitable assumptions if needed

1. (a) Construct an ER diagram for a hospital with a set of patients and a set of medical doctors. Associated with each patient a log of various tests and examination conducted. 10

   (b) Explain lossless join decomposition and dependency preserving decomposition 5

   (c) List four significant differences between file processing system and database management system 5

2. (a) What is a deadlock? How is it detected? Discuss different types of deadlock prevention scheme. 10

   (b) Write SQL queries for the given database 10

   Employee(eid,ename,street,city)

   Works(eid,cid,salary)

   Company(cid,cname,city)

   (i) Modify the database so that Jack now lives in 'Mumbai'

   (ii) Give all employees of 'ANZ Corporation' a 10% raise in salary

   (iii) Find all employee id who live in same cities as the company for which they work

   (iv) Give total number of employees

   (v) Find the highest paid employee

3. (a) What is an attribute? Explain different types of attributes with examples. 10

   (b) Companies manufacture ranges of products which are purchased by customers. The relation schema for this operation is given as :- 10

   Company(company_code,company_name,director#,director_name,{product name, cost, {cust#, customer_name, address}}) where { } represents a repeating groups and company_code, dirctor# and cust# contains unique values. Normalize this relation to third normal form.

TURN OVER

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4.	(a)	Explain following relational algebra operations with examples (i) set intersection (ii) Generalized projection (iii) Natural Join (iv) Aggregation operator	10
4	(b)	Explain nested loop join and block nested loop join algorithm in query processing.	10
5	(a)	Explain Timestamp ordering protocol and Thomas write rule	10
	(b)	Describe the three level schema architecture of DBMS. State different level of dependencies in this architecture.	10
6	(a)	Explain log based recovery	10
	(b)	Explain Hash join algorithm in query processing	10
