2022

Database Management Systems

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1.	a)	Explain the disadvantages of Traditional File Processing System.	10
	b)	Explain Physical level, Logical level and View level data abstraction.	06
	c)	List out four database system applications.	04
2.	a)	Explain the concept of super-key, candidate key, primary key, and foreign key with the help of example.	10
	b)	Differentiate between procedural and non-procedural query language? Give example.	06
	c)	What are Data Manipulation Language (DML) statements in SQL?	04
3.	a)	Explain following Relational algebra operations: Selection, Projection, Union, Cartesian product, Set difference and rename.	12
	b)	What is total and partial participation? Give example.	08
4.		Consider the following employee database where the primary keys are underlined. Give an expression in SQL for each of the following queries. Employee(employee_name, street, city) Works(employee_name, company_name, salary) Company(company_name, city) Manages(employee_name, manager_name) i. Find the names of the employee who earn salary greater than Rs. 90,000. ii. Find the company name located at "Delhi" city.	20

		iii. Find the employee name who earn the highest salary.	
		iv. Find employees name and city who is working for the company "IBM India Pvt. Ltd"	
		v. Find total number of rows in employee table.	
5.	a)	Differentiate between: i. Simple and Composite attributes ii. Single valued and multivalued attributes iii. Strong and weak entity sets	06
	b)	Explain mapping cardinality constraints in Entity –Relationship model with example.	08
	c)	What are the symbols used to draw an E-R diagram?	06
6	a)	What is Normalization? Define 1NF, BCNF and 3NF.	10
	b)	What is Functional Dependency? What is trivial functional dependency?	04
	c)	What is lossless join decomposition? Give an example of lossless join decomposition.	06
7.	a)	What is transaction? Explain the ACID properties of transaction.	08
	b)	What are the states of a transaction? Explain it.	05
	c)	What is schedule? Explain two phase locking protocol.	07