Code No:20CS3502

PVP20

PVP SIDDHARTHA INSTITUTE OF TECHNOLOGY

(Autonomous)

DATABASE MANAGEMENT SYSTEMS

Duration: 3 Hours **Max. Marks: 70**

Note:

1. Contains 5 essay questions with an internal choice. Each question carries 14 Marks.
2. All parts of Question paper must be answered in one place.

5 x 14 = 70 Marks

			Blooms Level	CO	Max. Marks
UNIT-I					
1	(a)	List the characteristics of database approach and explain with suitable examples.	L2	CO1	7
	(b)	Compare Centralized and Client Server Architectures for DBMS	L2	CO1	7
OR					
2	(a)	Discuss about data models, instances and schemas with suitable examples.	L2	CO1	7
	(b)	Outline the Three Schema Architecture for Database Systems	L2	CO1	7
UNIT-II					
3	(a)	Use Relational model constraints to define Primary keys and Foreign keys for the following relations Employee(Eno, Ename, Address, Phoneno, Dno) Department(Dno, Dname, Address,) Project(Pno,Pname,Plocation,Dno)	L3	CO2	7
	(b)	For the following schema write queries in relational algebra Emp(ssn:int, ename:string, address:string, salary:real, Dno:int) Dept (Dno: integer, dname: string, dlocation: stirng) i) Find the SSN's of employees whose salary is greater than 25000 ii) Find the names of employees working in 'Research' department iii) Find the departments located in 'Kolkata'	L3	CO2	7
OR					
4	(a)	Consider the SAILOR DATABASE Sailors (sid:string, sname:string, rating:integer, age:integer) Boats (bid:integer, bname:string, color:string) Reserves (sid:integer, bid:integer, day:date) Based on the above schema answer the following queries in SQL. i) Find the names of sailors with age greater than 30 ii) Find the colors of boats reserved by 'John' iii) Find the names of sailors who have reserved a red or green boat.	L3	CO2	7
	(b)	Explain different types of joins in Relational Algebra.	L2	CO2	7

UNIT-III					
5		Construct an ER Diagram for Super Market Management System and explain entities, attributes and relationships in the diagram.	L3	CO4	14
OR					
6		*Analyze the following database application scenario to draw ER diagram representing conceptual design of the database.* The database contains the Order and Customer entity types connected by a 1-M relationship from Customer to Order. Choose an appropriate relationship name using your common knowledge of interactions between customers and orders. Define minimum cardinalities so that an order is optional for a customer and a customer is mandatory for an order. For the Customer entity type, add attributes CustNo (primary key), CustFirstName, CustLastName, CustStreet, CustCity, CustState, CustZip, and CustBal (balance). For the Order entity type, add attributes for the OrdNo (primary key), OrdDate, OrdName, OrdStreet, OrdCity, OrdState, and OrdZip. Extend the ERD with the Employee entity type and a 1-M relationship from Employee to Order. Choose an appropriate relationship name using your common knowledge of interactions between employees and orders. Define minimum cardinalities so that an employee is optional to an order and an order is optional to an employee. For the Employee entity type, add attributes EmpNo(primary key), EmpFirstName, EmpLastName, EmpPhone, EmpEmail, EmpCommRate (commission rate), and EmpDeptName.	L4	CO4	14
UNIT-IV					
7	(a)	How to normalize a relation using 4NF to remove multivalued dependencies? Explain with an example. .	L3	CO3	7
	(b)	Consider the Universal relation R(A,B,C,D,E) and the set of functional dependencies A->BC, CD->E, B->D, E->A List the candidate keys for R. Decompose R into 2NF and 3NF relations.	L3	CO3	7
OR					
8	(a)	Identify the normal form that is used to remove partial dependencies in a relation. Show an example.	L3	CO3	7
	(b)	Compare 3NF and BCNF with examples.	L3	CO3	7
UNIT-V					
9	(a)	How Serializability is used for Concurrency Control.	L2	CO1	7
	(b)	Explain desirable properties of Transactions.	L2	CO1	7
OR					
10	(a)	Discuss Shadow Paging recovery technique.	L2	CO1	7
	(b)	Outline Transaction support in SQL.	L2	CO1	7

Course Coordinators Head of the Department