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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Fourth Semester, B.E. - Computer Science and Engineering

Semester End Examination; July / August - 2022

Database Management System

Time: 3 hrs *Max. Marks: 100*

Course Outcomes

The Students will be able to:

CO1: Design an ER model for a given example from real world description.

CO2: Design relational models for a given application using schema definition and constraints.

CO3: Develop complex queries using SQL to retrieve the required information from database.

CO4: Apply suitable normal forms to normalize the given database

CO5: Determine the roles of concurrency control in database design.

***Note: I) PART - A** is compulsory. **Two** marks for each question.*

***II) PART - B**: Answer any **Two** sub questions (from a, b, c) for a Maximum of **18 marks** from each unit.*

Q. No.		Questions	Marks
		I : PART - A	**10**
I	a.	Define the following : i) Data Abstraction ii) Data model	2
	b.	Explain stored and derived attribute with suitable example.	2
	c.	Write an example of CREATE TABLE command in SQL considering Primary key and Foreign key.	2
	d.	Define functional dependency.	2
	e.	List the desirable properties of Transaction.	2
		II : PART - B	**90**
		UNIT - I	**18**
1	a.	Explain three- Scheme Architecture. How can we use the three schema architecture in the concept of data independence?	9
	b.	Explain the advantages of using DBMS on the following aspects: i) Controlling Redundancy ii) Restricting Unauthorized Access iii) Efficiency Query Processing	9
	c.	Explain different types of attributes with an example for each.	9
		UNIT - II	**18**
2	a.	Discuss the different types of Updates Operations on a relation, indicating the possible violations of constructions.	9
	b.	Design an ER diagram for a hospital management that includes atleast 5 entities.	9
	c.	Mention various operations associated with unary relation. Explain each of them with suitable examples.	9

Contd… 2

UNIT - III **18**

3 a. Discuss various attribute, data types, and Domains in SQL. 9

b. Consider the following data base Schema:

EMPLOYEE : Fname Lname, Address, E-Id,
Mgr-id, salary, D_No.

DEPARTMENT: D_No, D_name, P-id.

PROJECT : P-id, P_name, D_no

MANAGER : Mgr-id, M_name D_No

Queries: Write SQL queries for the following 9

i) Retrieve address and E- id of the Employee (s) whose last name is 'Sharma'.

ii) Retrieve the E-Id and first name of employees whose salary is greater than the salary of all the employees in department 3.

iii) Retrieve the names of all Employees who work in Department number 5 having ' a' as the 3rd character in their first name.

c. Discuss about Ambiguous Attribute Names and Aliasing with suitable example for each. 9

UNIT - IV **18**

4 a. Explain any three Aggregate Functions in SQL with suitable example. 9

b. Illustrate the view creation process. Consider a student table assuming suitable attributes. Create view called as ' Address Table' from the student table and display the student Name and Address of all students whose ID is less than '5' . 9

c. List and explain informal design guidelines for relational schema with suitable example. 9

UNIT - V **18**

5 a. Discuss 2 NF and 3 NF with appropriate examples. 9

b. Explain Join Dependencies and illustrate how this is associated with fifth Normal form. 9

c. Describe the need for Recovery List and explain different types of failures that would occur in a transaction. 9

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