2CE221: DATABASE MANAGEMENT SYSTEMS

Lesson Planning

Sr. No.	Topic	Hour(s)
1.	**AN OVERVIEW OF DATABASE MANAGEMENT:** What is a database System? What is a database? Data independence Relational Systems and others.	[3]
2.	**AN ARCHITECTURE FOR A DATABASE SYSTEM**: The three levels of architecture Mapping, the database administrator, The database management system, the data communications manager, Client/Server architecture, Utilities, Distributed processing.	[4]
3.	**AN INTRODUCTION TO RELATIONAL DATABASES:** Relational systems, the relational model, optimization, base tables and views, the SQL language.	[3]
4.	**RELATIONAL DATA OBJECTS:** Domains and Relations: Domains, Relations, kinds of relations, Relations and predicates, Relational databases	[3]
5.	**RELATIONAL DATA INTEGRITY:** Candidate Keys and Related Matters: Candidate Keys, Primary Keys and Alternate Keys, Foreign Keys and rules, Nulls, Candidate keys and nulls, Foreign keys and nulls..	[3]
6.	**RELATIONAL OPERATORS:** **Relational Algebra:** Closure, set operations, special relational operations, algebra for, extend and summarize, Update operations, Relational Comparisons. **Relational Calculus:** Introduction, Tuple-Oriented relational calculus, Relational calculus vs. relational algebra, Computational capabilities Domain-Oriented relational calculus	[5]
7.	**THE SQL LANGUAGE:** Introduction , Data Definition, Data Manipulation-retrieval operations, Data manipulation-update operation, Table Expression, Conditional capabilities, Domain Oriented relational calculus	[2]
MSE Syllabus : Above Topics (1-7)		
8.	**FUNCTIONAL DEPENDENCIES:** Introduction, Basic definitions, Trivial and nontrivial dependencies, Closure of a set of dependencies, Closure of a set of attributes, Irreducible sets of dependencies	[5]
9.	**NORMALIZATION : 1NF, 2NF, 3NF, BCNF:** Introduction, Non-loss decomposition and functional dependencies, First, second and third forms, Dependency preservation, Boyce / Codd normal form. **Higher Normal Forms**: Introduction, Multi-valued dependencies and fourth normal form, Join dependencies and fifth normal form The normalization procedure summarized Other normal forms.	[5]
BSE Syllabus : Above Topics (1-9)		
10.	**THE ENTITY / RELATIONSHIP MODEL**: Introduction, The overall approach, An overview of the E/R model, E/R diagrams, Database design with the E/R model.	[4]
11.	**RECOVERY:** Transaction, transaction recovery, system recovery, media recovery, two phase commit, SQL support.	[3]
12.	**CONCURRENCY:** Three concurrency problems, locking, deadlock, serializability, levels of isolation, intent locking, SQL support	[3]
13.	**SECURITY:** General consideration, discretionary access control, request modification, mandatory access control, data encryption, SQL support.	[2]

14.	**BRIEF INTRODUCTION TO OBJECT ORIENTED DATABASE**	**[1]**
TOTAL		**46**

Text/Reference Books:

1. Database System Concepts by Silberschatz, Korth, Sudarshan
2. An introduction to Database Systems, C J Date, Addition-Wesley.
3. Database System using Oracle by Nilesh shah, PHI.
4. Fundamentals of Database Systems, Ramez Elmasri & Shamkant B. Navathe, Addison-Wesley.
5. SQL, PL/SQL by Ivan Bayross
6. Oracle9i PL/SQL programming by Scott Urman.

List of Practical DBMS

Sr. No.	Topic	Hour(s)
1.	1. Basic SQL commands ● Like Ed, c, spool etc. 2. Creating Table 3. Retrieve/view table structure	**[2]**
2.	Inserting Data into tables ● Global Insertion: Insert into all rows and columns ● Insert data into specified columns ● Insert data into specified order of columns ● Inserting data by getting prompt View / Retrieve Data from the table. ● Global Retrieval : All rows and columns e.g. SQL> select * from tablename ● Retrieving specific column data ● Retrieving data in specific sorted order ● Retrieve Unique values ● Dealing with NULL values ● Pattern Matching	**[4]**
3.	Update and Delete data of the table. ● Update and delete all Records / specific set of Records. ● Modify the structure of the table. ● Add new columns ● Modify existing columns ● Delete existing column	**[2]**
4.	Functions ● Numeric ● Date ● String ● Conversion Table file operation ● Renaming Table ● Delete table ● Create a table with existing table's structure and / or data ● Copy data from one table to another	**[4]**
5.	Nested Query (sub query will calculated once for all records of main query) Co-related Query (Sub query will be calculated every time for every record) Use of All, Any , Exists	**[2]** **[2]**
6.	Apply Data Constraints on Table ● Primary Key : Define Primary Key constraint at column & table level ● Foreign key : Defining foreign key constraint at column & table level ● Insert, update operation in the foreign key table ● Foreign key constraint defined on delete cascade ● Foreign key constraint defined on delete set null ● User Constraints Table ● Default ● Unique constraint at column level and table level ● Check constraint at column level and table level > Restriction on check constraint	**[6]** **[2]**

7.	Joins on Tables
	• Joining multiple table (Equi Join)
	• Types of join:
	  • Inner
	  • Outer (Right and Left outer join)
	  • Cross
	• Self Join
	• Join Operation in ANSI and Theta Style
	• Adding an additional where clause condition with join
		[2]
		[2]

8.	Use of Set operators • Union • Intersect • Minus (Except) Perform View operations • Creating • Modifying	**[4]**
9.	Perform the DCL commands (grant, revoke): Create a Student table with following fields: StudentCode, Name, Dateofbirth, Course, RollNo, Batch, Result. Grant and Revoke following security constraints: • User F has retrieve over entire table • User S has insert and delete on entire table. • Every user has retrieve over his/her record only. • User N has retrieve over entire table and update on Course and RollNo only • User T has retrieve over Name, StudentCode, and Result only. • User W has retrieve as T and update as N • User P has all the privileges for BE-IT student's records. • User J has delete on records for student of Batch B2 • User B has update and delete on students record of courses where there are no more than 5 student • User K has retrieve for Eldest and youngest student	**[4]**
10.	1) Create a PL/SQL block to find the sum of the even digits of a given number and print the sum. Here if number is 1347 then even digits are 3 and 7. 1. Create a PL/SQL block to calculate the Factorial of a given number. 2. Write a PL/SQL block to find whether the given number is palindrome or not. 3. Write a PL/SQL block to calculate salary of the Employee. Assume the desired records.	**[4]**
	Total	**40**