GANPAT UNIVERSITY

FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Application	**Branch/Spec.**	Computer Application
Semester	I	**Version**	1.0.0.0
Effective from Academic Year	2024-25	**Effective for the batch Admitted in**	June 2024
Subject code	P11A3DMS	**Subject Name**	Database Management System

Teaching scheme						**Examination scheme (Marks)**			
(Per week)	**Lecture (DT)**		**Practical (Lab.)**		**Total**		**CE**	**SEE**	**Total**
	L	TU	P	TW					
Credit	2	1	2	-	5	Theory	40	60	100
Hours	2	1	4	-	7	Practical	20	30	50

Objective

To make aware the students about Database concepts and PL/SQL programming.

Pre-requisites:

Students should have basic knowledge of Database concepts, Database design with E-R model and Relational Model. Students should also know basic of SQL DDL,DML statements and various inbuilt SQL functions.

Course Outcome:

Cos	Description
CO1	Apply functional dependencies and normalization techniques up to 5NF to structure well-designed database schemas.
CO2	Analyze query processing strategies and implement indexing and tuning techniques to improve database performance.
CO3	Evaluate concurrency control mechanisms and apply suitable protocols to ensure consistent and deadlock-free database transactions.
CO4	Design and develop PL/SQL programs using cursors, exceptions, triggers, and packages to automate and manage database operations.

Mapping of CO and PO

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8

CO1	3	2	1	2	–	–	–	1
CO2	2	3	2	3	–	–	–	1
CO3	2	3	2	2	–	–	1	1
CO4	3	2	3	3	1	1	–	1

Theory syllabus

Unit	Content	Hrs
	SECTION - I	
1	**Normalization of Database Tables:** Need for Normalization, Functional Dependencies, Normalization conversion process : Conversion for 1NF, Conversion for 2NF, Conversion for 3NF, Higher Level Forms: BCNF, 4NF and 5NF	08
2	**Database Performance Tuning and Query Optimization :** Database Performance Tuning concept, Query Processing, Indexes and Query Optimization, Optimizer Choices, SQL Performance Tuning, DBMS , performance Tuning and Query Optimization Examples	08
3	**Concurrency Control:** Lock-Based Protocols, Deadlock Handling, Multiple Granularity, Timestamp-Based Protocols, Validation-Based Protocols and Multiversion Schemes	07
	SECTION – II	
4	**Working with PL/SQL :** Generic PL/SQL Block, SQL Transactions, Error Handling in PL/SQL(System and User Define), Cursors: Types of Cursor, Cursor with Loops, Parameterized Cursor, Nested Cursor.	11
5	**PL/SQL Database Objects:** Stored Procedures and Functions: IN, OUT and INOUT parameters, Triggers: Types of Triggers(Raw Trigger, Statement Trigger, Before and After Trigger, Combination trigger),Create and Delete Trigger, Package: Introduction, Create, Invoke, Alter, overloading Procedure and Functions.	11

Practical content

List of programs specified by the subject teacher based on above mentioned topics

Text Books

1	Database System Concepts Sixth Edition Avi Silberschatz,Henry F. Korth,S. Sudarshan
2	Database Management System by Raghu Ramakrishnan/Johannes Gehrke – 2nd Edition,MC Graw Hill
3	DATABASE SYSTEMS Design, Implementation, and Management Carlos Coronel | Steven Morris
4	SQL,PL/SQL The Programming language of Oracle by Ivan Bayross – 4th Revised Edition , BPB Publication

Reference Books

1	Fundamentals of Database Systems by Ramez Elmasri and Shamkant B. Navathe -4th Edition Pearson Education.
2	Database Systems:Concepts, Design and Applications by S. K. Singh., Pearson Education
3	Database System Concepts by Abraham Silberschatz,Henry F. Lorth,S.Sudarshan – 5th

	Edition ,MC Graw Hill
4	Oracle Database 11g PL/SQL Programming by Michael Mclaughlin (Oracle Press)
	Web References
	1. https://nptel.ac.in/courses/106/106/106106220/ 2. https://www.tutorialspoint.com/plsql/index.htm 3. https://www.w3schools.com/sql/
	Question Paper Scheme: **University Examination Duration: 3 Hours** Note for Examiner: - (I) Questions 1 and 4 are compulsory with no options. (II) Internal options should be given in questions 2, 3, 5 and 6. **SECTION - I** Q.1 –8 Marks Q.2 –11 Marks Q.3 –11 Marks **SECTION - II** Q.4 –8 Marks Q.5 –11 Marks Q.6 –11 Marks