

COURSE NAME : COMPUTER TECHNOLOGY
COURSE CODE : CM
SEMESTER : FIFTH.
SUBJECT TITLE : DATA BASE MANAGEMENT (ELECTIVE-I)
SUBJECT CODE : 9117

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme						
TH	TU	PR	PAPER HRS	TH	TEST	PR	OR	TW	TOTAL
02	--	04	03	80	20	--	--	25@	125

Rationale:

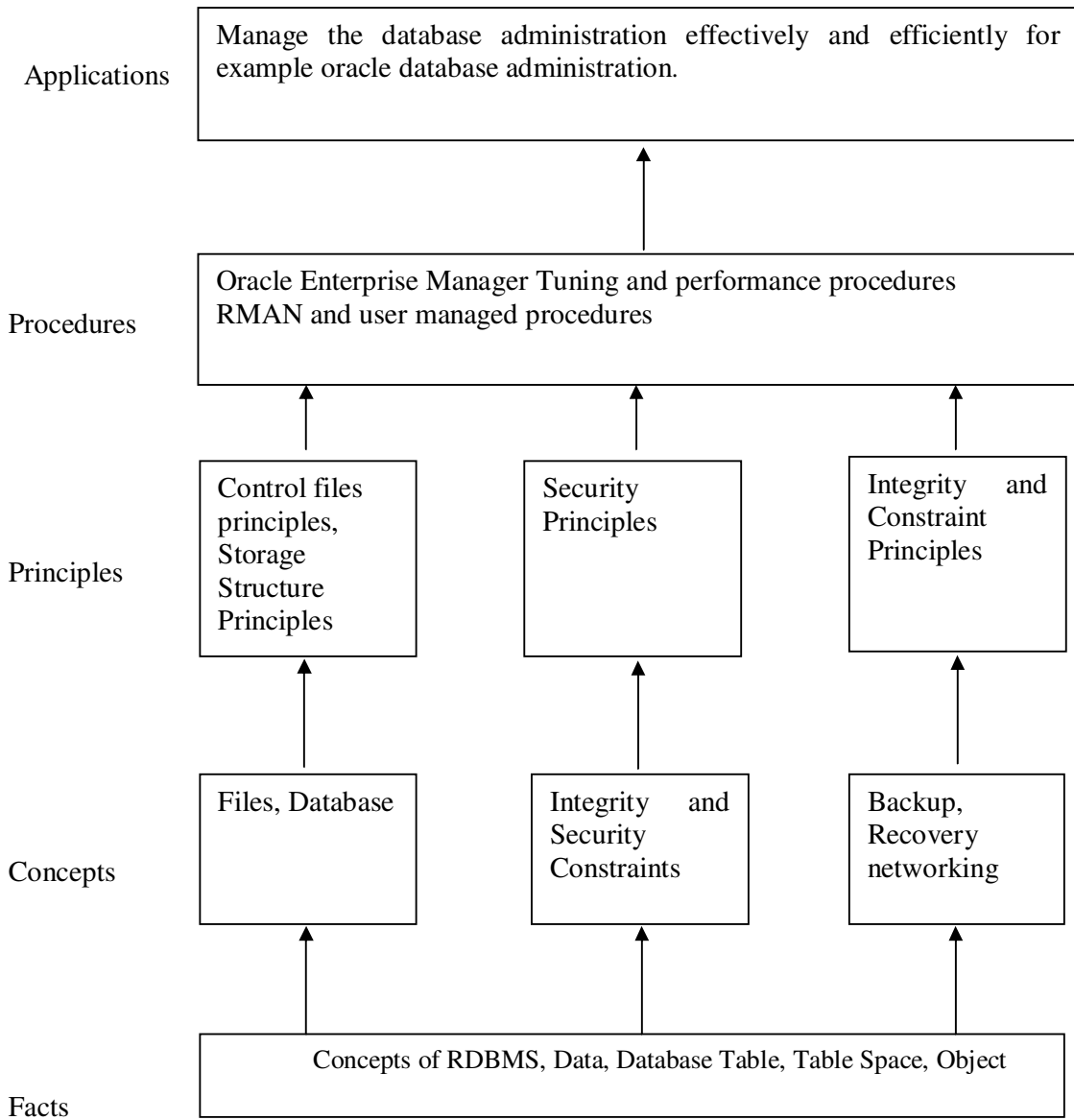
In the present era it is very essential to develop and arrange data in such a way that it sales a complex problem efficiently. Data base administration is a subject which emphasis make on managing the data and this duty is performed by the database administrator (DBA). The position of DBA in the IT industry is important since it deals with critical issues of design and management of database in a comprehensive manner. After studying this subject the student will be able to handle data collection and management of data and transformation in a secure environment. The student will also be able to set up the network configuration between the database clients and servers, reform backup and recovery.

Objectives:

Student will be able to:

- 1) Describe the oracle architecture.
- 2) Create and manage redo & Control files.
- 3) Create and manage user, roles, previteges tables, table spaces, indexes and integrity constraints.
- 4) Apply the concept of backup and recovery using user managed and RMAN.
- 5) Use oracle to manage networking tasks.
- 6) Apply tuning concepts to improve the performance.

Learning Structure:



Contents:- Theory

Chapter	Name of the Topic	Hours	Marks
01	<p>Oracle Architecture.</p> <p>1.1 Components of Oracle Architecture. Structures for connecting a user to an oracle Instance, Common database administrative tools for DBA, features of the oracle universal Installer, Optimal flexible architecture, Setting of Password file authentication, main components of oracle enterprise manager and their uses.</p> <p>1.2 Maintaining Control file. Use of control file, Control file, Multiplex and manage the control file, manage control file with oracle managed files.</p> <p>1.3 Managing an Oracle Instance. Create and manage Initialization parameter files, configure OMF, startup & shutdown an instance, monitor the use of diagnostic files</p> <p>1.4 Creating a Database. Prerequisite for database creation, creating a database using oracle database configuring assistant, Creating a database manually</p> <p>1.5 Maintaining redo log files. Purpose & structure of online redo log files, Control lock switches and check points, Multiplex and maintain online redo log files, Manage online redo log files with OMF.</p>	05	16
02	<p>Managing Users, Role and Database Objects.</p> <p>2.1 Managing users, privileges and roles. Creating new database users alter and drop existing database users, Monitor information about existing users, Identify system and object privileges, grant and revoke privileges, identify auditing capabilities, create and modify roles, Control availability of roles, remove roles, user predefined roles, display role information from the data dictionary.</p> <p>2.2 Managing table spaces. Managing table spaces, data files, tables, undo data and indexes logical structure of table spaces within the database, create table spaces, change the size of the table space allocate table space for temporary segments, Change the status of table spaces, change the storage setting of table spaces, implement oracle managed files, various methods of storing data, oracle data types, distinguish between an extended versus a restricted row id, structure of a row, creating regular and temporary tables, manage storage structures within a table, reorganize truncate, drop a table, purpose of undo data, automatic undo management different types of indexes and their uses creating, reorganizing and dropping indexes, get index information from the data dictionary.</p>	05	16

	<p>2.3 Storage structure and relationships Logical structure of segments, segment types and uses, keywords that control block spaces usage, get information about storage structures from the data dictionary.</p> <p>2.4 Data dictionary content and usage Data dictionary components, contents and uses of data dictionary, query the data dictionary.</p> <p>2.5 Managing password security, resources and data integrity, Manage passwords using profiles, administrator profiles, control use of resources using profile, implement data integrity constraints, maintain integrity constraints, obtain constraint information from the data dictionary.</p>		
<p>03</p>	<p>Oracle Backup and Recovery</p> <p>3.1 Backup and recovery overview. Basics of database backup, restore and recovery, types of failure in an oracle environment, backup and recovery strategy.</p> <p>3.2 Instance and media recovery structures. Oracle processes, memory structures and files related to recovery, importance of check points, redo log files and archived log files, instance recovery.</p> <p>3.3 Configuring the database archiving mode Difference between archive log and no archive log modes; configure a database for archive log mode, automatic archiving, multiple archiving processes.</p> <p>3.4 Oracle recovery manager overview and configuration. RMAN features, components, configuring RMAN.</p> <p>3.5 User managed backups and RMAN backups. User managed backups and recovery operations, backup issues with read table spaces, perform closed and open database backups, backup the control file, cleanup after a failed online backup, DB verify utility to detect corruption, types of RMAN specific backups backing up with RMAN, copy command to create image copies.</p> <p>3.6 User managed complete recovery and RMAN complete recovery. Recovery in non archive log mode and complete recovery in archive log mode using user managed and RMAN, restore data files to different locations, relocate and recover a table space by using archived redo log files.</p>	<p>09</p>	<p>20</p>

	<p>3.7 User managed incomplete recovery and RMAN incomplete recovery. Necessity of incomplete recovery, Methods for incomplete recovery, incomplete recovery with user managed backups, incomplete recovery using RMAN and using enterprise manager, recovery of the control file, recovery through reset logs.</p> <p>3.8 RMAN maintenance and recovery catalog creation and maintenance.</p> <p>Cross checking of backups, updating the repository, changing the status of backup and copies, catalog backups made with operating system commands, contents of recovery catalog, creating the recovery catalog and maintaining it by using RMAN commands, using RMAN to register, resynchronize and reset a database, querying recovery catalog to generate reports and lists, create, store and run scripts.</p>		
04	<p>Oracle Networking</p> <p>4.1 Networking overview and basic oracle net architecture. Managing complex networks, oracle networking add-on solutions, components of oracle net layered architecture, oracle net services role, web client connections through oracle networking.</p> <p>4.2 Configuring oracle networking. Establishing a session, creating and managing a listener, database registration, the listener control utility, techniques for name resolution, configuring service aliases, advanced connection options, testing oracle net connections.</p> <p>4.3 Managing shares servers Limitations of dedicated server architecture, shared server architecture, configuring shared server, monitoring the shared server when to use the shared server</p>	08	16
05	<p>Oracle performance and tuning overview</p> <p>5.1 Tuning application design, tuning SQL, tuning memory usage, tuning data access, tuning data manipulation, tuning physical storage, reducing network traffic, using STATSPACK and the automatic work load repository, using STATSPACK, tuning tools, alert log, background trace file, server generated alerts, user trace files.</p>	05	12
Total		32	80

Practical:

Skills to be developed:

Intellectual Skills:

1. Use of proper installation process

Motor Skills:

1. Use of appropriate steps & Sequence

List of Practical:

- 1) Demonstration of Installation of Oracle database software
- 2) Create a database with database configuration assistant.
- 3) Starting up and shutting down database with SQL and Plus and with database control and viewing parameters with database control.
- 4) Use enterprise manager to create after and drop a table space.
- 5) Use enterprise manager to grant system and manage database user.
- 6) Use enterprise manager to grant system and object privileges.
- 7) Use enterprise manager to create and manage roles and profiles.
- 8) Create database objects and constraints using enterprise manager.
- 9) Create and Us password profiles
- 10) Create a listener with database control, oracle net service alias and configure dynamic service registration.
- 11) Configure and verify shared server and configure a client to choose the connection type.
- 12) Create and undo table space with database control and monitor undo with SQL plus.
- 13) Detect and resolve log connection.
- 14) Instance recovery and MTTR to demonstrate the effect of check pointing on MTTR.
- 15) Multiplex the redo log and translation the database to archive log mode.
- 16) Run a whole database backup and back up the control file to trace with SQL plus and manage RMAN backups.
- 17) Recovery the data from loss of control file and multiplex online redo log file. Recovery a lost of multiplexed online log file and recovery the data from loss of non critical data files.
- 18) Set a listener password with isnrctl and creating a listener for external procedural calls.
- 19) Configure RMAN.
- 20) Create backup sets using RMAN and managing backups.

- 21) Set, view and clean alerts using DBMS_SERVER_ALERT_AMI and database.
- 22) Perform an incomplete recovery with RMAN, and carrying out control file auto backup and restore.
- 23) Use the SQL tuning adviser for database management.

Learning Resources:

1. Books:

Sr. No.	Author	Title	Publication
1	--	Oracle Database Log	OCP Cerification All in one Exam guide Oracle Pears
2	--	Oracle Database DBA Handbook	Oracle Pears
3	Rama Velpuri	Oracle 9I Database: Fundamentals II exam guide	--

2. WebSites:

- 1) www.oracle.com/technology/pub/articles/tech_dba.html
- 2) www.oracle.com/technology/oramag/oracle/03-may/0330cp.html