Tribhuvan University
Institute of Science and Technology
B.Sc. CSIT Seventh Semester Detailed-syllabus

Course Title: Database Administration
Course no: CSC-406 **Full Marks:** 60+20+20
Credit hours: 3 **Pass Marks:** 24+8+8

Nature of course: Theory (3 Hrs.) + Lab (3 Hrs.)

Course Synopsis: DBA Roles, DB backup, restoration and recovery, Tuning of database

Goal: The course covers about: principles of DBA Roles, DB backup, restoration and recovery, Tuning of database and overall DB administration which could be useful for administrator in the future.

Course contents:

Unit	Course Content-breakdown	Lecture Hours
	Introduction: • DBMS architecture and data independence • DBA roles and responsibilities • SQL *PLUS Overview • SQL *Plus Fundamentals • Producing more readable outputs • Accepting values at runtime • Using iSQL *Plus.	**5 Hrs**
2.	**Log File Management:** • Introduction to Control and Redo Log Files • Managing the control files • Maintaining and monitoring redo log files • Multiplexing redo log files • Archiving log files	**5 Hrs**
3.	**Managing users and security:** • Profiling and Managing users • managing user privileges and roles • managing and querying role information • Database Security and Auditing • Creating and managing DB objects ▪ Tables, indexes, triggers, views, stored procedures, etc. • Transaction concurrency management	**10 Hrs**
4.	**DB Backup and Recovery:** • Backup and Recovery Overview • Database backup, restoration and recovery • defining of backup and recovery procedure • Testing the backup and recovery plan • parallel instance recovery • recovering from non-critical loses	**10 Hrs**
5.	**Oracle Recovery Manager (RMAN):**	**5 Hrs**

	• Database corruption • automatic storage management • RMAN configuration • Database Archival	
6.	**Unit 6: DB Performance Tuning:** • Introduction • Tuning methodology • Tuning concepts • AADM (Automatic Database Diagnostic Monitor) • SQL Tuning Advisor • AWR Report • Virtual Private Database ▪ Policy types, selective columns, column masking	**10 Hrs**

Laboratory works:

1. Installation of Oracle Database
2. Database Creation
3. User Creation
4. Role, Privileges and group management
5. Database object creation
    a. Tables
    b. Indexes
    c. Views
    d. Triggers
    e. Stored Procedures
    f. Function
    g. Package, etc.
6. Database Backup
    a. Online backup
    b. Offline backup
7. DB Recovery technique
    a. Export and Import utility
    b. Data Pump
    c. Data guard
8. RMAN
9. Database Archiving
10. Performance Tuning
    a. ADDM Report
    b. AWR Report
    c. Spot Light
    d. OEM

Text Books:

1. Introduction to Database Administration, by O'reilly
2. ORACLE DBA handbooks

3. C.J. Date, Database Systems, Addison Wesley, 2000

Homework Assignment:
Assignment should be given throughout the semester and must be done individually.

Computer Usage: No Specific

Prerequisite: Database Management System

Category Content:	Science Aspect:	40%
	Design Aspect:	60%

Committee:

Prof. Dr. Subarna Shakya (Expert)	-Tribhuvan University
Bishnu Nath Gautam	-New Summit College
Ram Krishna Dahal	-Kathford College
Laxman Adhikari	-Amrit Science Campus

May 29-30-2012 (Jestha 16th and 17th 2069)
Central Department of Computer Science and Information Technology, TU

Model Question (Database Administration)

Tribhuvan University
Institute of Science and Technology

Bachelor Level/Fourth Year/Seventh Semester/Science — Pass Marks: 24
Database Administration (CSC-406) — Full Marks: 60
Time: 3 Hours.

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Group A

Long Answer Questions (Attempt any TWO questions) [2×10=20]

1. What do you mean by database management system? Mention the clear architecture of database management system including its different files.
2. You are working as DBA in Nepal Clearing House Limited which handle 24/7 online system. You have to design security and backup procedure for the organization.
3. What are the various kinds of performance report available in the oracle database management system mention the name and describe them one by one.

Group B

Short Answer Questions (Attempt any Eight questions) [8×5=40]

4. What is DML? Explain all the SML command with suitable example.
5. What is a view? Write an importance of view.
6. Explain the role of database administrator?
7. What is ASM? Mention the capabilities of ASM.
8. Write the command to add new redo group and drop group in the database.
9. Write DDL command for following.
    a. Change table product to product_org
    b. Add new check constraints in the status field of product_org table value of status field should always (00,01 and 09)
    c. Create backup table of sales
    d. Disable check constraint in the table.
10. What is AWR report? Write all the component of AWR report.
11. What do you mean by parallel instance recovery?
12. Write a trigger to create log of every update and delete statement of product table.
13. Write short note of followings:
    a. Step to create backup device
    b. Internet database connector