University of Pune

Proposed Draft of

M.C.A. (Science faculty) COMPUTER SYLLABUS

TO BE IMPLEMENTED FROM ACADEMIC YEAR 2009-10

MCA Semester-IV
CS-406 Database Administration I (MySQL)

Total numbers of lectures: 52

Chapter No & Name	Name of the topics in chapter	Total No of lectures	Ref Books
1 Client/Server Concepts	General MySQL Architecture, Invoking Client Programs, Server SQL Modes	2	B2,B3
2 The mysql Client Program	Using mysql Interactively, Statement Terminators, The mysql Prompts, Editing Keys in mysql, Using Script Files with MySQL, mysql Output Formats, Client Commands and SQL Statements, Using Server-Side Help, Using the --safe-updates Option	2	B1,B2
3 Data Types and Functions in MySQL	Numeric Data Types, The BIT Data Type, String Data Types, Temporal Data Types, Column Attributes, Using the AUTO_INCREMENT Column Attribute, Handling Missing or Invalid Data Values, Aggregate Functions, Numeric Functions, String Functions, Date Functions, DateTime Functions	2	B1,B3
4 Identifiers	Identifier Syntax, Case Sensitivity, Using Qualified Names, Reserved Words as Identifiers	1	B1,IL2
5 Basic SQL	Creating Databases ,Altering Databases, Dropping Databases, Creating Tables, Altering Tables, Emptying Tables, Dropping Tables, Indexes, Dropping Indexes	1	B1,B2,B3
6 Querying for Data	Using SELECT to Retrieve Data, Specifying Which Columns to Retrieve, Specifying Which Rows to Retrieve, Aggregating Results, Grouping Results	1	B1

	Using UNION		
7 MySQL Expressions	Components of SQL Expressions , Numeric Expressions, String Expressions, Temporal Expressions, NULL Values, Functions in SQL Expressions, Comments in SQL Statements	1	B1,B3
8 Updating Data	Update Operations, The INSERT Statement, The REPLACE Statement, The UPDATE Statement, The DELETE and TRUNCATE TABLE Statements, Privileges Required for Update Statements	2	B1
9 Joins	Overview, Writing Inner Joins, Writing Outer Joins, Resolving Name Clashes Using Qualifiers and Aliases, Multiple-Table UPDATE and DELETE Statements	2	B1
10 Subqueries	Types of Subqueries, Subqueries as Scalar Expressions, Correlated Subqueries , Comparing Subquery Results to Outer Query Columns, Comparison Using Row Subqueries , Using Subqueries in the FROM Clause, Converting Subqueries to Joins,Using Subqueries in Updates	2	B1
11 Views	Reasons to Use Views , Creating Views, Altering Views, Dropping Views, Checking Views, Displaying Information About Views, Privileges for Views	2	B1
12 MySQL Architecture	Client/Server Overview, Communication Protocols, The SQL Parser and Storage Engine, Tiers, How MySQL Uses Disk Space, How MySQL Uses Memory	3	B2
13 Starting, Stopping, and Configuring MySQL	Types of MySQL Distributions, Starting and Stopping MySQL Server on Windows, Starting and Stopping, MySQL Server on Unix, Runtime MySQL Configuration, Log and Status Files, Loading Time Zone Tables, Security-Related Configuration, Setting the Default SQL Mode, Upgrading MySQL	5	B1, B2
14 Client Programs for DBA Work	Overview of Administrative Clients, mysql, Mysqladmin, mysqlimport, mysqldump, Client Program Limitations	4	B1
15 Character Set Support	Performance Issues, Choosing Data Types for Character Columns	3	B1
16	Locking Concepts , Explicit Table	2	B1

Locking	Locking, Advisory Locking		
17 Storage Engines	MySQL Storage Engines, The MyISAM Engine, The MERGE Engine, The InnoDB Engine,The MEMORY Engine, The FEDERATED Engine, The Cluster Storage Engine, Other Storage Engines	5	B1,B2
18 Data (Table) Maintenance	Types of Table Maintenance Operations, SQL Statements for Table Maintenance, Client and Utility Programs for Table Maintenance, Repairing InnoDB Tables, Enabling MyISAM Auto-Repair	4	B1,B2
19 The INFORMATION_SCHEMA Database	INFORMATION_SCHEMA Access Syntax, INFORMATION_SCHEMA Versus SHOW, Limitations of INFORMATION_SCHEMA	4	IL1
20 Data Backup and Recovery Methods	Introduction, Binary Versus Textual Backups, Making Binary Backups, Making Text Backups, Backing Up Log and Status Files, Replication as an Aid to Backup, MySQL Cluster as Disaster Prevention, Data Recovery	4	B2

References:

1. MySQL 5 for Professionals By Ivan Bayross, Sharanam Shah [SPD Publications]
2. High Performance MySQL By Jeremy D. Zawodny, Derek J. Balling [O'Reilly Media Publications]
3. MySQL in a Nutshell By Russell Dyer [O'Reilly Media Publications]

Important Links:

1. http://www.thegeekstuff.com/2008/11/overview-of-mysql-information_schema-database-with-practical-examples/
2. http://www.learn-mysql-tutorial.com/Identifiers.cfm

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Proposed Draft of

M.C.A. (Science faculty) COMPUTER SYLLABUS

TO BE IMPLEMENTED FROM ACADEMIC YEAR 2010-11

SEMESTER V

Code	Subject Name
CS-501	Cryptography and Network Security
CS-502	Internet Programming
CS-503	Design patterns
CS-504	Data Warehousing and Mining(Departmenta)
CS-505	Software Testing and Quality Assurance
CS-506	Elective V-(Departmental)
	1. Current Trends and Technology
	2. Expert System
	3. Foreign Languages
	4. Database Administration II
CS-507	General Laboratory (Departmental) (Assignments on Internet Programming and a Project in Java/MFC (50 marks Assignments and 50 marks Project)

MCA Semester-V

CS-501 Cryptography and Network Security

Total numbers of lectures: 48

Chapter No	Name of the topics in chapter	Total No of lectures	Ref Book & page no
1. Introduction to concept of security	Need, Principles, Policy, Types of attacks, Basic Network security terminology	3	T1:1-25 T2:1-10,306-328
2. Basic Cryptography	Definition, Goals of Cryptography, Encryption and Decryption, Classical Cryptographic Techniques, Substitution ciphers, Transposition ciphers, Steganography : uses and security ,Cryptanalysis	4	T1:29-39 T2:11-31
3. Types of Cryptography	Symmetric Key Cryptography : Stream Ciphers, Block Ciphers, Algorithm Types and modes (Electronic code book, Cipher block chaining, Cipher feedback, Output Feedback) Computer based Symmetric Key Cryptographic Algorithms (Data Encryption Standard and variations, International Data Encryption Algorithm , RC5, Blowfish)	10	T1:63-106 T2:32-73,87-105 T4: 265-364
4. Mathematical Foundation (Number Theory)	Prime number, Fermat's Theorem, Euler's Theorem, Modular arithmetic, Discrete Logarithms, Quadratic Residues, Chinese remainder theorem, Primality testing	2	T1:396-400, T2: 106-117 T3;488-491 T4: 233-261
5	Asymmetric Key Cryptography (Public Key Cryptography) Diffie Hellman Key exchange algorithm, RSA algorithm, One way hash function, Digital Signature, MD5, Secure hash algorithm, Digital Certificates	10	T1:112-160,162-165 T2:118-137,204-215 T4:429-455,466-472
6	Network Security introduction, revision of TCP/IP,IP datagram format, Virtual private networks	2	T1:333-369
7	IP Security , IPsec protocol, Internet Key exchange protocol, Authentication header, Encapsulating Security Payload	5	T1: 333-369 T2:239-266
8. Internet Security Protocols (Web Security) Security	Socket layer, Secure hypertext transfer protocol, Secure electronic transaction, Pretty Good Privacy, S/MIME,	4	T1:212-270 T2:267-280,216 -238

9. Authentication	User Authentication , Password based authentication, Certificate based authentication, Biometric authentication, Kerberos, Ticket granting approach, Authentication Model, Kerberos and Public key cryptography, Applications of Kerberos, X.509 authentication service	4	T1:271-309 T2:162-203
10. Firewall	Introduction, Packet Filters, Application level gateways, Circuit level gateways, Firewall architecture, Benefits and limitations of Firewall, access control mechanism.	4	T1:338-348 T2:329-343

References:

T1: Cryptography and Network Security By Atul Kahate (Tata Mcgraw-hill Publishing Company Limited)

T2: Cryptography and Information Security By V.K. Pachghare (PHI Learning Private Limited)

T3: Introduction to Computer Security By Matt Bishop and Sathyanarayana (PEARSON EDUCATION)

T4: Applied Cryptography Protocols, Algorithms, and Source Code in C By Bruice Schneier (Wiley India)

Important Links:

1. http://crsc.nist.gov/publications/nistpubs/index.html
2. Virus Bulletin: http://virusbtn.com
3. http://www.cryptool.org

Note:

No question to be asked on

1. Mathematical Foundation (Number Theory)
2. Network Security introduction & revision of TCP/IP,IP

MCA Semester-V

CS 502 : Internet Programming with PHP

Total numbers of lectures: 45

Chap. No.	Chapter Name	Total No. of Lectures	
1	Introduction to Internet Programming. ▪ Client <-> Server model ▪ Browsers - Graphical and Hypertext Access to the Internet ▪ HTTP - HyperText Transfer Protocol (how it actually works).	02	
2	Overview and Language Essentials	02	
3	Output, Associative Arrays, Debugging	04	
4	HTML forms, the $_POST array, and writing to files	05	
5	Reading files, Reading from other Servers Security: Filtering Input and Escaping Output	06	
6	Strings and Parsing	06	
7	Carrying Data from Page to Page: Cookies and Sessions Functions and Objects	06	
8	XML and JSON responses	09	
9	E-mail from your script	05	

References:

B1: PHP Programming by orielly series.
B2:Beginning XML by David Hunter and David Gibbons.
B3:AJAX and PHP: Building Responsive Web Applications
by Cristian Darie, Bogdan Brinzarea, Filip Cherecheş-Toşa, Mihai Bucica;

MCA Semester-V

CS 503: Design Patterns

Total numbers of lectures: 48

Chapter. No.	Chapter Name	Total No of Lectures	Books
1	Introduction to Patterns What is a Pattern, What Makes a Pattern? Pattern Categories	02	B1
2	Architectural Patterns Layers, Pipes and Filters, Blackboard, Broker, Model View Controller	10	B1
3	Introduction to Design Pattern What is a Design Pattern? ,Describing Design Pattern, The Catalog of Design Patterns, Organizing the Catalog	03	B7
4	Creational Design Pattern Abstract Factory, Prototype, Singleton	09	B7
5	Structural Design Pattern Adapter, Decorator, Proxy	09	B7
6	Behavioral Design Pattern Command, Observer, Strategy	09	B7
7	Introduction to Idioms What can Idioms Provide? Idioms and Style, Counted Pointer Idioms	06	B1

References:

B1: Pattern Oriented Software Architecture (ISBN: 9971-51-421-4) by Frank Bushmann
Regine Meunier, Hans Rohert,Peter Sommerlad, Micheal Steal (John Wily & Sons Ltd.(Volume I)

B2: Design Patterns (ISBN: 81-7808-135-0) by Erich Gamma, Richard Helm, Ralph Johnson,John Vlissides (Pearson Education Inc.)

MCA Semester-V

CS-504 Data Warehousing and Data Mining (Departmental)

Total Number of Lectures: 48

Chapter No	Name of topics	Total no of lectures	Ref. Book
1	Data Warehouse, Need for data warehouse, Multidimensional Data Model, Data Warehouse Architecture, Implementation	3	1,2,4,8
2	Data WareHouse and Technology, Data Marting, When is Data Mart Appropriate, Cost of Data Marting, Testing data Warehouse	3	1,2,4,8
3	Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, Major issues in Data Mining, Data Mining Vs KDD, Data Warehousing to Data Mining	6	1,2
4	DATA PREPROCESSING, LANGUAGE, ARCHITECTURES,KDD : Data Preprocessing: Needs Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretisation and Concept Hierarchy Generation, Online Data Storage, Data Mining Primitives, Languages	3	1,3
5	CONCEPTS DESCRIPTION: Characterization and Comparison: Data Generalization and Summarization-Based Characterization, Analytical Characterization: Analysis of Attribute Relevance, Mining Class Comparisons: Discriminating between Different Classes, Mining Descriptive Statistical Measures in Large Databases	8	1
6	ASSOCIATION RULES : Association Rule Mining, Single-Dimensional Boolean Association Rules from Transactional Databases, Multi-Level Association Rules from Transaction Databases	8	1
7	CLASSIFICATION & CLUSTERING Classification and Prediction, Issues, Decision Tree Induction, Bayesian Classification, Association Rule Based, Other Classification Methods, Prediction, Classifier Accuracy, Cluster Analysis, Types of data, Categorization of methods, Partitioning methods, Outlier Analysis.	8	1,4,7

8	Web Mining , Spatial Mining, Temporal Mining	7	1,3
9	Case Study, Usage of Data Mining Tool	4	

References:

1. Data Mining – Concepts and Techniques - JIAWEI HAN & MICHELINE KAMBER Harcourt India.
2. Data Mining Techniques – ARUN K PUJARI, University Press
3. Data Mining: Introductory and Advanced Topics- Margaret H.Dunham, S.Sridhar
4. Data Warehousing in the real world,- Sam Anahory, Dennis Murry, Pearson Education.
5. Building the Data Warehouse- William Inmon
6. Data Warehousing Fundamentals- Paulraj Ponniah, Wiley-Interscience Publication.
7. Data Mining – Pieter Adriaans, Dolf Zantinge
8. The Data WareHouse Toolkit – Ralph Kimball

MCA Semester-V

CS – 505 Software Testing and Quality Assurance

Total Number of Lectures: 48

Chapter No. & Name	Name of topic in Chapter	Total No. of lectures	Ref. Book & Page Nos.
1. Software Testing	Introduction, Nature of errors An example for Testing	4	Book2 Pgs. 267 - 269
2. Software Testing Methods	Testing Fundamentals, Test Case Design, White Box Testing Black Box Testing	6	Book1 Pgs. 448 –455 470 - 471
3. Testing For Specialized Environments	Testing GUI's, Testing of Client/Server Architectures, Testing Documentation and Help Facilities, Testing for Real-Time Systems	6	Book1 Pgs.477- 481
4. Software Testing Strategies	Strategic Approach to Software Testing, Unit Testing, Integration Testing, Validation Testing ,System Testing	7	Book1 Pgs. 487-493 494-509
5. Software metrics	Introduction, Basic Metrics, Complexity Metrics	5	Book 2 Pgs. 357- 361
6. Software Quality Assurance	Concepts, Quality Movement, Background issues and SQA activities Software Reviews, Formal Technical Reviews, Formal approaches to SQA Statistical Quality Assurance, Software Reliability, SQA Plan, The ISO 9001 Quality Standard, Six sigma	8	Book 1 Pgs. 179-203
7. Quality Improvement	Pareto Diagrams, Cause-Effect Diagrams, Scatter Diagrams, Run Charts	4	Book 3,4,5

Techniques			
8. Quality Costs	Quality Cost Measurement, Utilizing Quality Costs for Decision-Making	3	Book 3,4,5
9. Testing Tools (Introduction and execution only)	Junit, Apache Jmeter, Winrunner Loadrunner, Rational Robot	5	www.opensource**testing**.org

References:

Book 1) Software Engineering – A Practitioners Approach
Roger S. Pressman
Tata McGraw Hill

Book 2) Software Engineering for Students- A Programming Approach
Douglas Bell
Pearson Education

Book 3) Quality, 5th ed., Prentice-Hall, 2010.
Donna C. S. Summers

Book 4) Total Quality Management, Prentice Hall, 2003.
Dale H. Besterfield

Book 5) Software engineering: An Engineering approach, John Wiley.
J.F.Peters, W.Pedrycz

MCA Semester-V

CS – 506 Current Trends and Technology

(ASP.NET using C#)

Total Number of Lectures: 48

Chapter No & Name	**Name of the Topics in chapter**	**Total No of lectures**	**Ref Book & Page no. eg:**T1 –pg 345
1. Overview of .NET	Building Blocks of .NET Framework, .NET Compatible Languages, CLS (Common Language Specification), CTS (Common Type System), CLR (Common Language Runtime), Working of CLR, Assembly and Components of Assembly	3	3
2. The C# Programming Language	Structure of C# Program, Passing Command line arguments, System.Console class, Sytem.Object Class, Value Types and Reference Types, Implicit and Explicit Conversion, Boxing and Unboxing, .NET Enumerations, Method Parameter Modifiers (ref, out and params), Array types, System Data Types, System String DataType	4	1,2
3. Inheritance and Polymorphism	Pillars of Object oriented Programming, Class and Class Members, Access Modifiers, Constructor,	3	1,2

	Destructor, Property, Indexer, Methods, Interface, Structure, Inheritance, Polymorphism		
4. Exception Handling	Exception Handling, Exception Class, User Defined Exception	1	1,2
5. Understanding Garbage Collection	Memory Management Basics, Garbage Collection, Garbage Collection Phases, Generational Garbage Collection, Resource management, Implicit, Explicit	3	1,2
6. Unsafe Code	Pointers, Writing Unsafe Code	1	1,2
7. Delegates and Events	Delegate, Unicast Delegate, Multicast Delegate, Delegate Chaining, Asynchronous Delegate, Anonymous Methods, Events	2	1,2
8. Collection Classes	Collections, System.Array Class, Collection Interfaces, Non-Generic Classes, ArrayList, Stack, Queue, HashTable, Generic Classes, List<T>, Stack<T>, Queue<T>, Dictionary<K,V>, LinkedList<T>	3	1,2
9. Reflection, Late Binding,	Reflection, Sytem.Type Class , System.Reflection Class, Assembly Class, MemberInfo	2	1,2

Attributes	Class, Late Binding, Attributes, Standard Attribute Custom Attribute		
10. .NET Assemblies	Assembly, Components of Assembly, Private Assemblies Shared Assemblies	2	1,2
11. Threading	Thread Synchronization	1	1,2
12. File I/O and Synchronization	System.IO Namespace, Stream Class, Serialization, Binary Serialization, XML Serialization, SOAP Serialization	3	1,2
13. System.Windows.Forms	Windows Application, Windows Form Namespace, Windows Application, Form, Common members of Form class, Controls, Properties and Events, Dialog Boxes, Graphics Class	3	2,3
14. ADO.NET	Data Providers, ADO.NET Components, ADO.NET Objects, ADO.NET Interfaces, Connected and Disconnected architecture	3	2,3
15. ASP.NET Architecture	ASP.NET Architecture, IIS (Internet Information Services), HTTP Pipeline, Postback and ViewState, Page Life Cycle, Intrinsic objects of Page Class	3	3

16. Controls	HTML Control, Web Server Control, Validation Control, Rich Web Server Control	2	3
17. State Management and Caching	Client Side, View state, Cookies, Querystring, Server Side, Application variable, Session Variable, Session State Management using SQL Server, Caching, Page Caching, Fragment Caching, Data Caching	3	3
18.	User Controls	1	3
19.	Master Pages and Themes	2	3
20.	LINQ	3	3

References:

1. Inside C# by Tom Archer and Andrew Whitechapel
2. Profesional C# 2005/2008 by Wrox Publication
3. Profesional ASP.NET 2005/2008 by Wrox Publication

CS-506 Expert Systems (Elective)

Total numbers of lectures: 47

Chapter No & Name	Name of the topics	Total No of lectures	Book
Chapter:15 Expert systems architecture	Introduction, Rule-based system architectures, Non production system architectures, Dealing with uncertainty, Knowledge acquisition and validation, Knowledge system building tools.	7	B1
Chapter:16 General Concepts in Knowledge Acquisition	Introduction, Types of learning knowledge acquisition is difficult, General Learning model, Performance measures	5	B1
Chapter:18 Learning by induction	Introduction, basic concepts & definitions, Generalization and Specialization, Inductive bias, Example of an inductive learner.	5	B1
Chapter: 17 Early work in machine learning	Introduction, Perceptrons, checker playing example, learning Automata, genetic algorithms, intelligent editors	8	B1
Chapter: 20 Analogical & Explanation based learning	Introduction, analogical reasoning & learning, examples of analogical, reasoning systems, explanation based learning	7	B1
Neural Networks	Hop field n/w, Learning in neural n/w, Back propagation, Boltzmann machines, Recurrent n/w, Distributed representation, comparison between connectionist & symbolic approaches	14	B3 & B4

References:

1. Introduction to Artificial intelligence and Expert system –Dan W. Patterson
2. Artificial intelligence – Knight
3. Recurrent Neural networks for prediction – Mandic, Chambers
4. An introduction to neural network – Kevin Gurney

CS-506 Foreign Language (FRENCH)

Total numbers of lectures: 48

Unit	Name of the topics in chapter	Total No of lectures	Ref Book & page no
	Introduction to France, Numbers, Alphabet	1	Pages 1 – 10
0	Unit 0	9	Pages 9-22
1	Lesson 1	6	Pages 24-34
1	Lesson 2	5	Pages 36-44
1	Lesson 3	7	Pages 46-57
1	Lesson 4	10	Pages 59-71
2	Lesson 1	10	Pages 73-88

References:

1. Jumelage

CS-506 Foreign Language (GERMAN)

Total numbers of lectures: 48

Unit	Name of the topics in chapter	Total No of lectures
	Introduction to germany, Numbers, Alphabet	1
0	Folk literature	9
1	Lesson 1	6
1	Modern Short Prose	5
1	Poetry	7
1	Longer Narrative Prose:	10
2	Translation of a seen / known literary passage	10

References:

Am kürzeren Ende der Sonnenallee by Thomas Brussig (gekürzt und vereinfacht by Ulla Malmmose) Volk und Welt Publishers Berlin 1999

CS – 506 Database Administration II

(Oracle 10g)

Total Number of Lectures: 48

Chapter No & Name	**Name of the Topics in chapter**	**Total Number of lectures**	**Ref Book & Page nos. eg:**T1 –pg 345
1. Oracle10g Instance creation and management	What is an Oracle Instance?, Installing Oracle, Oracle Optimal Flexible Architecture (OFA), Locating initialization, listener.ora & sqlnet.ora files, Finding the alert log, Common environment variables,Structures in an Oracle Instance, Oracle Memory Structures, SGA and PGA, Oracle Processes and their purposes, Startup nomount, mount and open database commands	4	
2. Oracle10g Database Architecture	Oracle10g management framework Using the Database Creation Assistant (DBA), Creating and dropping a database, Tablespaces, Tables and Indexes, Clusters, Partitioning of Tables and Indexes, Gathering and applying patches	6	
3. Concurrency Management	Transactions, Serialization, locks and latches, Lock Modes, Detecting and resolving lock conflicts, Managing Deadlocks	3	
4. Interfacing with Oracle	Oracle transaction management Using SQL *Plus and iSQL *Plus Using embedded Oracle with	3	

	Pro*C & JAVA, PL/SQL and Triggers, PiningPL/SQL packages and compiling PL/SQL, System-level triggers – startup trigger, logon trigger, PL/SQL error trigger		
5. Oracle*Net	Basic Network structure, Oracle*Net Files, Multi-threaded server, Create additional listeners, Create Oracle Net service aliases, Configure connect time failover, Use ping and tnsping Oracle*Net names resolution	4	
6. Tablespace Managemen Overview	Dictionary Managed Tablespaces Locally Managed Tablespaces, Automatic Segment Space Management, Moving tablespaces online and offline	6	
7. UNDO Tablespace Management	Use of undo segments,Creating an undo tablespace, User managed undo tablespaces, Automatic undo management, Monitor & Configure undo retention, Use the Undo Advisor Size the undo tablespace	6	
8. Oracle Performance Tuning	Locate invalid and unusable objects, Gather SQL optimizer statistics with dbms_stats, Basic Oracle performance metrics, Use OEM and dbms_alert to set warning and critical alert thresholds The SQL Tuning Advisor, The SQL Access Advisor Interpreting server generated alerts, Oracle advisory utilities vdb_cache_advice, vshared_pool_advice, v$pga_aggregate_target_advice Using OEM performance screens, Fixing performance issues	6	
9. User	Creating Users, Altering users, User Profiles, User resource groups, Granting privileges &	2	

Management	roles, Auditing user activity with dbms_audit		
10. Oracle Security	Password use in Oracle, Password encryption and password aging, External authentication, Using Single sign-on (SSO), Object security, Virtual Private Databases (VPD) in Oracle, Oracle “grant execute” security, Use of Roles in Oracle, Register for security updates	2	
11. Backup & Recovery	Oracle backup & recovery planning, Parallel instance recovery, Basics of checkpoints, redo log files, and archived log files, Using ARCHIVELOG mode, Creating consistent Oracle backups, Online hot backups, Incremental Oracle backups, Automating database backups with dbms_scheduler Monitor the flash recovery area Recovering from loss of a Control file, Recovering from loss of a Redo log file,Recovering from loss of a system-critical data file, Recovering from loss of a non system-critical data file	6	

References:

1. Oracle Essentials: Oracle database 10g By Rick Greenwald; Robert Stackowiak; Jonathan Stern
2. Oracle Databse 10g: The complete Reference By Kevin Loney
3. OCP: Oracle 10g new features for Administrator By Bob Byla and biju Thomas
4. OCA - Oracle 10g administrator's guide By Chip Dawes
5. Oracle Databse 10g: A beginner's guide By Ian Abramson, Michael S. Abbey, Michael Corey