

**Tilak Maharashtra University**  
**Bachelor of Computer Applications (BCA)**  
**Second Year**  
**BCA 321- C++**  
**Examination 1**

**INTRODUCTION**

C++ programming Basic

Object Oriented programming, Characteristics, Advantages of object Oriented programming over procedural language.

**INTRODUCTION TO C++, EXTENSION OF C**

Data types, constants, references, Variable, Loops and decisions

Arrays, strings and Structures Revision

Classes and objects

**INTRODUCTION TO C++ CLASSES:**

Data Members, Functions, Scope resolution operator,

Access specifier

New, delete operator, Static members.

**CONSTRUCTOR and DESTRUCTOR**

Encapsulation, Inline functions, and default parameters

Pointers and '*This*' pointer

**OVERLOADING:**

Function Overloading, Operator Overloading

Default Arguments

**Examination 2**

**INHERITANCE:**

Base class, derived class, Virtual Class, Abstract class.

**POLYMORPHISM**

Virtual functions, Pure Virtual functions and abstraction

Function Overloading and ambiguities

All remaining types of functions

**STREAM CLASS, FILE INPUT/OUTPUT.**

FStream classes, working with files with functions for reading and writing

**EXCEPTION HANDLING.**

Fundamental, Multiple catch statements, catching all exception  
Templates concept

Revision and completion of all theory and practical assignments

## BCA - 322 DBMS

# Examination 1

### 1.0 Objectives

- 1.1 Storage devices characters
- 1.2 File Organization
  - Sequential Files
  - Indexing and methods of indexing
  - Hash files

### 2: Introduction To Database Systems

- 2.0 Objective
- 2.1 Introduction To DBMS
  - 2.1.1 What is Data, Database system, DBMS?
  - 2.1.2 Single and Multi-user systems
  - 2.1.2 Advantages and drawbacks of DBMS
  - 2.1.3 Architecture of DBMS
  - 2.1.4 Users of DBMS
  - 2.1.5 Roll of Database Administrator
- 2.2 Components of DBMS
- 2.3 Types of DBMS
  - Hierarchical
  - Network
  - Relational
- 2.4 Why RDBMS?
- 2.5 Features of RDBMS
- 2.6 Attributes, tuples & tables, codd's rules

### 3: Entity Relationship Model

- 3.0 Objectives
- 3.1 Entity Relationship Model
  - 3.1.1 Entity set
  - 3.1.2 Relationship set
  - 3.1.3 Attributes and values.
- 3.2 Weak and Strong Entity
- 3.3 Keys in DBMS
- 3.4 Conventions for drawing ERD
- 3.5 Abstraction
- 3.6 Generalization

### 4: DBMS Concepts

- 4.0 Objectives

- 4.1 ACID Properties
- 4.2 Concurrency Control
- 4.3 Recovery Mechanisms
- 4.4 Views And Security
- 4.5 Integrity Constraints
- 4.6 Data Security

## **5: Relational Database Design**

- 5.0 Objectives
- 5.1 Need For Proper Database
- 5.2 Undesirable Properties Of Bad Database Design
- 5.3 Functional Dependencies
- 5.4 Normalization Using FDS
  - 1 NF
  - 2 NF
  - 3 NF
  - BCNF
- 5.5 Properties Of Decomposition
  - Loss less Join
  - Dependency Preserving

# **Examination 2**

## **6: SQL Relational Database Design**

- 6.0 Objectives
- 6.1 Introduction
- 6.2 DDL
- 6.3 DML
- 6.4 DCL
- 6.5 Simple Queries

## **7: Security**

- 7.0 Objectives
- 7.1 Granting access to users
- 7.2 Extending and restricting privileges
- 7.3 Using views of security

## **8: Transaction Processing**

- 8.0 Objectives
- 8.1 Transaction, transaction processing
- 8.2 Properties of Transaction
- 8.3 Schedules
- 8.4 Serializing and its need

## **9 :Backup and Recovery**

9.0 Objectives

9.1 Types of failure and storage systems

9.2 Need for backup and recovery

**10: Concurrency Control & Recovery Techniques**

10.0 Objectives

10.1 Concurrency problems

10.2 Concurrency control mechanisms

10.3 Deadlocks

10.4 Deadlocks handling detection and prevention

**11: Introduction To Data Warehousing And Data Mining**

11.0 Objectives

11.1 Data Warehousing

11.2 Data Mining

## BCA - 323 UNIX & Linux Fundamentals

# Examination 1

### Unit – I

Introduction, Unix Basic Concepts, History of Unix & Linux, The Unix Operating System, Files & Processes, Unix Flavors, Unix Fundamentals.

### Unit – II

Concept & Architecture: Introduction, The Linux Architecture, Operating System Summarization, Overview of Linux Kernel, Kernel Space & User Space. Shells in Linux, Features of Shells, Types of Shells. Primary features & advantages of Linux.

### Unit –III

Installation: Introduction, Media, Installation Modes, Setting up the language, Setting up Keyboard & mouse, Post Installation Tasks, Installing more applications, Configuration. Configuring Networking, Configuring the Boot Sector, Configuring Swap space.

### Unit – IV

Linux File System Architecture: Directory Structure. Linux Basic & Essential Commands like pwd, date cal, cat, touch. Copying Files & Directories, Moving Files & Directories, Removing empty directories & directories. Head, tail, more, less & history commands.

### Unit – V

The VIM Editor: Advantages & Disadvantages, Modes of VIM editor. Cursor Movement, Entering the Insert mode, Leaving the Insert mode, Undoing Changes, Searching for text, Saving & Exiting the VIM editor. Some command mode tricks. Standard Input & Output, redirecting input & Output, Redirection Operators, Piping.

### Unit – VI

User & Group Administration: User Administration, Adding new user account, User private groups, Modifying or Deleting user accounts. Group Administration, Creating Groups, Modifying groups. Some important commands for user & group administration. Switching Accounts with “su” command.

# Examination 2

## **Unit –VII**

Files, Directories & Special Permissions: Permission types, File permissions in Linux, Directory permissions in Linux, Examining, Interpreting & Changing permissions. Special File Permissions: Default File Permissions, The Sticky bit, SUID & SGID bits for files & directories.

## **Unit –VIII**

Processes & Signals in Linux: Process, Process States, Listing & Finding Processes, Verifying Specific Process Information. Signals: Sending signals to processes, Scheduling Processes priorities, Altering Priorities. Scheduling jobs using Crontab. The xinetd service.

## **Unit – IX**

Study of File System & Related Commands: Study of RPM commands, RPM queries & verification. Study of Tar commands. Disk related commands. File system management, Study of /etc/fstab, Accessing & Mounting the device, file systems. Runlevels & study of /etc/inittab. Shell Programming, basics, conditional and loop statements, Control Structures.

## **Unit – X**

Network study: Introduction to network configuration, IP configuration, Assigning IP address, Binding Multiple IP addresses, Configuration Utilities, DHCP client configuration.

## **Unit – XI**

Troubleshooting: Introduction, X Windows Troubleshooting, Troubleshooting: Networking, Order of Boot Process, File System Corruption, Rescue Environment

## **Reference Books:**

The complete Linux reference- Christopher Negus

UNIX Concepts and Application – By Sumitabha Das

## BCA 324 –Communication Skills

# Examination 1

### **1. The Types of Business Communication**

Introduction

Business Communication

The Classification, Functions & Scope of Business Communication

Internal Communication

External Communication

Conclusion

### **2. The Communication Process**

Elements of Communication

The Communication Cycle

The Barriers To Communication

### **3. The Principles of Communication**

Introduction

The Medium of Communication

Accuracy

Brevity

Clarity

Courtesy

Conclusion

### **4. The Modes of Communication**

Introduction

The Types of Communication

Oral Communication

Written Communication

Non-Verbal Communication

Visual Signs in Non-Verbal Communication

Audio Signals in Non-Verbal Communication

Silence

Time

Touch

The Functions of Non-Verbal Communication

The Merits & Demerits of Non-Verbal Communication

Conclusion

### **5. Verbal Skills**

Introduction

The Language used in Oral Communication

Verbal & Linguistic Modifiers & Regulators & Voice Culture

The Techniques of Delivery

Conclusion

## Examination 2

### **6. The Art of Listening**

Listening & Hearing  
The Value of Listening  
The Functions of Listening  
The Pitfalls involved in Listening  
The Process of Listening / The Principles of Listening  
How to Listen Efficiently  
The Barriers to Efficient Listening  
The Types of Listening  
Conclusion

### **7. Body Language**

Introduction  
The Types of Body Language  
Facial Expressions  
Kinesics Related To The Body  
Touch  
Conclusion

### **8. How to conduct Oral Communication**

The Classification of Oral Communication  
Dyadic Communication  
Group Communication  
Requests  
Complaints  
Inquiries  
Introduction  
Dictation  
The Telephone  
Interviews An Overview  
At the Interview Venue

### **9. The Essentials of Written Communication**

Introduction  
Alignment  
Font Style  
Bold, Italics & Normal  
Font Size  
Indentation & Block Style  
Items  
Emphasis  
Letter Heads  
Continuation Sheets  
Stationery  
Presentation

Conclusion

**Reference Books:**

1. Communication Skills : Dr. Rao & Dr. Das- Himalaya Publishing House
2. Communication Skills : Dr. Urmila Rai, S.M. Rai – Himalaya Publishing house
3. Communication : By C.S. Rayadu - Himalaya Publishing House
4. Developing Communication Skills : Mohan Banerjee, Macmillan, India
5. Business Correspondance & report : R. C. Sharma, Krishna Mohan Writing- A Practical approach to Business & technical communication
6. Communication Skills for : Dr. Anjali Ghanekar, Everest Publishing

## Examination 1

### 1. Organization & Organizational Behavior

Introduction

Organization

Organizational Behaviour

Intuition & Systematic Study

Organization & Organizational Behavior

Historical Evolution of Organizational Behavior

Discipline Organizational Behavior

Organizational Behavior to –Day

Models for organizational Behaviour

### 2. Perception & Individual Decision Making

Introduction

Factors Influencing Perception

Attribution Theory

Frequently used Shortcuts in Judging others

Specific Application in Organizations

The Link between Perception & Individual Decision Making

Improving Creativity in Decision Making

How are Decisions actually made in Organizations?

Individual Differences: Decision Making Styles

Organizational Constraints

Ethics in Decision Making

### 3. Personality & Attitude

Introduction

Definition

Theories on Personality

The shaping of Personality

Assessment of Freud's Stages

Immaturity to Maturity

Determinants of Personality

Personality Traits

The Myers – Briggs Framework

Major Traits Influencing Organizational Behavior

Personality & Organizational Behavior

Attitudes

Formation of Attitudes

Types of Attitudes

Functions of Attitudes

Changing Attitudes  
Ways of Changing  
Types of Change  
Attitudes & OB  
Job Satisfaction  
Job Involvement  
Organizational Commitment  
Values  
    3.24 Job satisfaction

## Examination 2

### 4. Learning

Nature of Learning  
Process of Learning  
Cognitive Theory of Learning  
Social Learning Theory  
Principles of Learning  
Schedules of Learning  
Learning Curves  
Learning & Organizational Behavior

### 5. Motivation

Introduction  
Intrinsic and extrinsic motivation  
Some theories on motivation  
Motivation and Performance  
Motivation strategies  
Importance of motivation  
Motivational drives

### 6. Stress

Introduction  
Model of stress  
Stress manifestation  
Coping strategies  
Coping and personality  
Sources of stress  
Stress management  
Organization approaches to stress management