

GOVT. DEGREE COLLEGE, LARKANA
DEPARTMENT OF COMPUTER SCIENCE
BS in COMPUTER SCIENCE
SEMESTER-II
TECHNICAL & BUSINESS WRITING

- 1. Technical Writing**
 - 1.1 Its definition, importance & purpose.
- 2. Technical Writing Process**
 - 2.1 Three Stages
 - 2.1.1 Pre-writing or planning stage
 - 2.1.2 Writing or drafting stage
 - 2.1.3 Post writing or finishing state
- 3. Defining Audience**
 - 3.1 Audience knowledge level and role
 - 3.2 Audience attitude
- 4. Technical Writing Style**
 - 4.1 Guidelines for writing clear sentences
 - 4.2 Guidelines for writing clear paragraph
 - 4.3 Guidelines for organizing clearly
 - 4.4 Guidelines for revising for clarity
- 5. Researching**
 - 5.1 Methods of researching
 - 5.2 Questioning, Interviewing, surveying
 - 5.3 Collecting Information
- 6. Summarizing & Outlining**
 - 6.1 Definition-How to summarize
 - 6.2 Development & outlines
- 7. Formatting & Visual Aids**
 - 7.1 Guidelines for effective visual
 - 7.2 Aids-Illustration & Chart
- 8. Memorandum-Format Writing**
- 9. Essay Writing on Scientific Topic**
- 10. Grammar**
 - 10.1 Use of Article
 - 10.2 Use of Preposition
 - 10.3 Active & Passive voice
 - 10.4 Direct & Indirect Narration
- 11. Technical Report Writing.**
 - 11.1 As a project report for the practical training of the students.

RECOMMENDED BOOKS

1. Technical Report Writing Today by Steven E. Pauley & Daniel G Riodan
2. High School English Grammar and Composition by Wren and Martin.

MARKS DISTRIBUTION

	Mid(Th)	Final(Th)	Attendance	Assign:	Total
Internal	10	20	10	10	50
External	By S.A.L.U Khairpur				50
Total					100

GOVT. DEGREE COLLEGE, LARKANA
DEPARTMENT OF COMPUTER SCIENCE
BS in COMPUTER SCIENCE
SEMESTER-II
DISCRETE STRUCTURE

1. **The foundation (Logic, Sets, Functions)**
 - 1.1 Logic
 - 1.2 Propositional Equivalences
 - 1.3 Predicates & Quantifiers
 - 1.4 Sets
 - 1.5 Sets Operations
 - 1.6 Functions
 - 1.7 Sequence & Summations
 - 1.8 Propositional Calculus

2. **Mathematics Reasoning**
 - 2.1 Methods of Proof
 - 2.2 Mathematical Induction

3. **Counting**
 - 3.1 The Basics of Counting
 - 3.2 The Pigeonhole Principles
 - 3.3 Permutations & Combinations
 - 3.4 Probability Theory
 - 3.5 Recurrence Relations
 - 3.6 Inclusion-Exclusion
 - 3.7 Application of Inclusion-Exclusion
 - 3.8 Partitions

4. **Relations**
 - 4.1 Relations and their Properties
 - 4.2 Equivalence Relations
 - 4.3 Partial Ordering

5. **Algebraic Structure & Techniques**
 - 5.1 What is an Algebra?
 - 5.2 Boolean Algebra
 - 5.3 Abstract Data Types as Algebra
 - 5.4 Computational Algebra

RECOMMENDED BOOKS

TEXT

1. **Discrete Mathematics and its Application (3rd Edition) By Kenneth H. Rosen.**

REFERENCES

1. Discrete Mathematics with its Application By H.E. Mattson, Jr.
2. Discrete Mathematics By James L. Hein.
3. Discrete Mathematics By Susana

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Internal	10	20	10	10	50
External	By. SALU, Khairpur				50
Total					100

GOVT. DEGREE COLLEGE, LARKANA

DEPARTMENT OF COMPUTER SCIENCE

BS in COMPUTER SCIENCE

SEMESTER-II

OBJECT ORIENTED PROGRAMMING (C++)

Introduction to Object Oriented Language.

- 1.1 Difference between Object Oriented and Structured Language
- 1.2 Key characteristics of Object Oriented Language
- 1.3 Introduction of Object and Classes
- 1.4 Object and Encapsulation
- 1.5 Messages and Polymorphism
- 1.6 Classes and Inheritance.

2. Classes: Implementing Objects

- 2.1 The Analomy of class
- 2.2 Defining variables
- 2.3 Specialization Hierarchy

3. Introduction of C++

- 3.1 Difference between C / C++
- 3.2 Function Definition
- 3.3 Function Prototype
- 3.4 Storage Classes
- 3.5 Inline functions
- 3.6 Unary Scope Resolution Operator
- 3.7 Function Overloading

4. Arrays and String

- 4.1 Define Array
- 4.2 Accessing Array element
- 4.3 Multidimensional Array
- 4.4 Strings
- 4.5 Comparing, sequencing, searching strings

5. Classes.

- 5.1 Introduction
- 5.2 Classes and Data Abstraction
 - 5.2.1 Classes Scope and Assessing Class members
 - 5.2.2 Controlling Access Members
 - 5.2.3 Initializing Class Objects: Constructor
 - 5.2.4 Using default arguments with Constructor
 - 5.2.5 Using Destructor
- 5.3 Constant objects and constant member functions
- 5.4 Composition: objects as member of classes
- 5.5 friend functions and friend classes
- 5.6 Static Class members
- 5.7 Data Abstraction and Information

6. Operator Overloading

- 6.1 Introduction
- 6.2 Fundamentals of Operator Overloading
- 6.3 Restrictions on operator overloading
- 6.4 Overloading stream insertion and stream extraction operator
- 6.5 Overloading Unary operators
- 6.6 Overloading binary operators

7. Inheritance

- 7.1 Introduction
- 7.2 Inheritance: Base Classes in Derived Class
- 7.3 Overriding Base Classes in Derived Class
- 7.4 Public, Private and Protect inheritance
- 7.5 Direct Base classes and Indirect Base Classes

- 8. Virtual Functions and Polymorphism**
 - 8.1 Introduction
 - 8.2 Virtual Functions
 - 8.3 Polymorphism

- 9. C++ Stream Input / Output**
 - 9.1 Introduction
 - 9.2 Streams
 - 9.2.1 Stream Input
 - 9.2.2 Stream Output
 - 9.3 Unformatted I/O with read, gcount and write
 - 9.4 Stream Error States

- 10. Exception Handling**
 - 10.1 Introduction
 - 10.2 Other error handling technique
 - 10.3 Basics of C++ Exception Handling: try, throw, catch
 - 10.4 Throwing an Exception
 - 10.5 Catching an Exception
 - 10.6 Rethrowing an Exception

Books:

Object Technology
By : Dabid A. Taylor

How to Program C++
By : Deitel & Deitel

MARKS DISTRIBUTION

	Mid (Th)	Final (Th)	Attendance	Assig:	Total
Internal	10	20	10	10	50
External					50
Total					100
PRACTICAL			EXTERNAL		
INTERNAL			25		
25			50		
TOTAL			50		

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SEMESTER-II

Pak-Studies

- 1) **Ideology of Pakistan.**
- i. Creation of Pakistan, the aims and objects
 - ii. Ideology of Pakistan
 - a. Definition
 - b. Ideology of Pakistan in the light of the views of Allama Iqbal and Quid-e-Azam.
 - iii. Historical Perspective:
 - a. National reformation movements (Sheikh Sarhandi, Shah Waliullah and Afterwards)
 - b. Educational Efforts (Aligarh, Devband, Nidwah, Anjum Himayat-ul-Islam and other local educational institution, Sindh Madersa, Islamic College Peshawar)
 - i. Constitutional reforms and Muslims separate electorates.
 - ii. Pakistan Movement

- 2) **Pakistan Movement.**
- i. Muslim Nationalism/Evaluation of Two-nation theory.
 - ii. The question of independence of India and role of Muslims. Separation of Sindh.
 - iii. Address of Allama Iqbal at Allahabad
 - iv. The election of 1973 and attitude of the congress ministries. Role of Sindh Muslim League Branch.
 - v. Pakistan Resolution.
 - vi. 1946 election and transfer of power.

- 3) **The Creation of Pakistan.**
Initial difficulties and important events.
Efforts to implement Islamic System in Pakistan.

- i. Objective resolution.
- ii. Islamic provisions of 1956, 1952 and 1973 Constitutions.
- iii. Various steps to enforce shariah.
- iv. Our goal-establishment of perfect Islamic Society

4) **The Land of Pakistan**

- i. Geographical Unity, Locations, Geographical importance, urban and rural areas.
- ii. Natural Resources.
- iii. Agriculture.
- iv. Industries.
- v. Manpower (Education)

5) **Pakistan and Muslims World.**

BOOKS RECOMMENDED:-

1. Pakistan Study, by C. Ishtiaque.
2. Pakistan Study, by Gull Shahza Sarwar.

MARKS DISTRIBUTION

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DEPARTMENT OF COMPUTER SCIENCE

BS in COMPUTER SCIENCE

SEMESTER-II

CALCULUS AND ANALYTICAL GEOMETRY

1. Complex Number

1.1 Complex Numbers (Subtraction, Addition, Multiplication & Division)

1.2 Prove of De-Moivre's theorem.

1.3 Application.

- (i) To express $\cos n\theta$ & $\sin n\theta$ as finite sums of the trigonometrically functions of θ
- (ii) To express powers of cosine (or sine) in a series of cosines (or sines) of multiples of θ

of θ Functions

1.4 Functions & Graph

1.5 symmetrical properties

1.6 Curve Tracing

1.7 Open & Closed intervals.

1.8 Domain & Range of functions.

1.9 Simple Cartesian curves.

2. Limit

2.1 Limit of a Function (Definition)

2.2 Right & Left Limits of a function

2.3 Limit of a function as "X" approaches to a

2.4 Behavior of Functions by using left & Right Limits.

3. Continuity

3.1 Continuous & Discontinuous Functions.

3.2 Types of Discontinuity

- (i) Infinite Discontinuity
- (ii) Removable Discontinuity
- (iii) Jump Discontinuity

4. Differentiation of Function

4.1 Derivation of a function (ab - initio method)

4.2 Rules for differentiating functions.

4.3 Derivative of composite functions (chain rule)

4.4 Derivative of trigonometric functions

4.5 Derivative of Inverse Trigonometric functions.

4.6 Derivative of exponential & logarithmic functions.

4.7 Tangent & Normal to the curve.

4.8 Rate & Change.

4.9 Application to tangent Normal.

4.10 Maximum & Minima.

4.11 Point of Inflexion

4.12 Taylor & Maclaurin expansions.

5. Anti derivative

5.1 Fundamental Integration Formula.

5.2 Indefinite Integral.

5.3 Methods of Integration.

- (i) Integration by substitution.
- (ii) Integration by parts.
- (iii) Integration by partial fraction.

5.4 Definite integral.

5.5 Application to determine Area & Arc Length, Volume & surface of revolution.

RECOMMENDED LIST OF BOOKS

1. Schaum's Outline Series, Differential And Integral Calculus (3rd Edition).
2. Calculus and Analytic Geometry by B. Thamos Jr. Ross L. Finney.
3. Calculus & Analytical Geometry (By Thomes Finney)
4. Calculus with Analytical Geometry (By N.M Talpur / S.M Yousif)

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SEMESTER-II
Basic Electronics

1. FUNDAMENTALS OF SEMICONDUCTOR PHYSICS

- 1.1 Band theory
- 1.2 Semiconductors (intrinsic & extrinsic)
- 1.3 P N Junction
- 1.4 P N Junctions as Rectifier
- 1.5 Clipper & Clamper Circuits
- 1.6 Zener Diode & Voltage Regulator
- 1.7 LED & LCD

2. TRANSISTORS

- 2.1 Bi polar Junction Transistors
- 2.2 BJT biasing Circuits
- 2.3 Q-Point
- 2.4 BJT as a switch
- 2.5 BJT Amplifiers
- 2.6 Classes of Amplifier
- 2.7 Power Amplifier
- 2.7 Metal Oxide Semiconductor Field Effect Transistors (MOSFET)

3. Inverter circuits

- 3.1 NMOS
- 3.2 PMOS
- 3.3 CMOS

4. Introduction to A/D & D/A Conversion Circuits

BOOKS RECOMMENDED:-

- 1. Electronic Devices and Circuit Theory by Robert Boylestad
- 2. Electronic Circuits and Applications by Benard Grob
- 3. Freedman & Young, University Press(10th Edition)
- 4. Resnick, Halliday & Krane, College Physics (6th edition)

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