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CHAUDHARY CHARAN SINGH UNIVERSITY, MEERUT  
THREE YEARS BACHELOR OF COMPUTER APPLICATION PROGRAMME

**COURSE CONTENT** (w.e.f. August 2011)

**SEMESTER I**

**COURSE CODE**

BCA-101  
BCA-102  
BCA-103  
BCA-104  
BCA-105  
BCA-106P  
BCA-107P

**QUALIFYING PAPER**

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**COURSE NAME**

Mathematics -I (MATHS)  
Programming Principle & Algorithm (PPA)  
Computer Fundamental & Office Automation (CFOA)  
Principle of Management (POM)  
Business Communication (BC)  
Computer Laboratory and Practical Work of Office Automation  
Computer Laboratory & Practical Work of C Programming  
Environmental Studies (EVS)

**SEMESTER II** ✓

**COURSE CODE**

BCA-201  
BCA-202  
BCA-203  
BCA-204  
BCA-205  
BCA-206P

**COURSE NAME**

Mathematics II (MATHS)  
C Programming (C Prog)  
Organization Behavior (OB)  
Digital Electronics & Computer Organization (DECO)  
Financial Accounting & Management (FAM)  
Computer Laboratory and Practical Work of C Programming

**SEMESTER III**

**COURSE CODE**

BCA-301  
BCA-302  
BCA-303  
BCA-304  
BCA-305  
BCA-306P  
BCA-307P

**COURSE NAME**

Object Oriented Programming Using C++ (C++)  
Data Structure Using C & C++ (DSC)  
Computer Architecture & Assembly Language (CAAL)  
Business Economics (BE)  
Elements of Statistics (EL)  
Computer Laboratory and Practical Work of OOPS  
Computer Laboratory and Practical Work of DS

**SEMESTER IV** ✓

**COURSE CODE**

BCA-401  
BCA-402  
BCA-403  
BCA-404  
BCA-406  
BCA-405

**COURSE NAME**

Computer Graphics & Multimedia Application (CGMA)  
Operating System (OS)  
Software Engineering (SE)  
Optimization Techniques (OT)  
Mathematics-III (MATHS)  
Computer Laboratory and Practical Work of CGMA

SEMESTER V

COURSE CODE

- BCA-501
- BCA-502
- BCA-503
- BCA-504
- BCA-505P
- BCA-506P
- BCA-507P
- BCA-508P

COURSE NAME

- Introduction to DBMS
- Java Programming and Dynamic Webpage Design
- Computer Network
- Numerical Methods
- Minor Project
- Viva-Voice on Summer Training
- Computer Laboratory and Practical Work of DBMS
- Computer Laboratory and Practical Work of Java Programming & Dynamic Webpage Design

507  
508

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SEMESTER VI

COURSE CODE

- BCA-601
- BCA-602
- BCA-603
- BCA-604
- BCA-605P
- BCA-606P

COURSE NAME

- Computer Network Security
- Information System: Analysis Design & Implementation
- E-Commerce
- Knowledge Management
- Major Project
- Presentation/Seminar based on Major Project

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**CHAUDHARY CHARAN SINGH UNIVERSITY, MEERUT**  
**THREE YEARS BACHELOR OF COMPUTER APPLICATION PROGRAMME**

**COURSE CONTENT FOR SEMESTER - I**

**BCA-101 MATHEMATICS -I**

<b>Unit - I DETERMINANTS</b>	Definition, Minors, Cofactors, Properties of Determinants ✓ <b>MATRICES:</b> Definition, Types of Matrices, Addition, ✓ Subtraction, Scalar Multiplication and Multiplication of Matrices, Adjoint, Inverse, Cramers Rule, Rank of Matrix Dependence of Vectors, Eigen Vectors of a Matrix, Cayley- Hamilton Theorem (without proof)
<b>Unit - II LIMITS &amp; CONTINUITY:</b>	Limit at a Point, Properties of Limit, Computation of Limits of Various Types of Functions, Continuity at a Point, Continuity Over an Interval, Intermediate Value Theorem, Type of Discontinuities
<b>Unit- II DIFFERENTIATION:</b>	Derivative, Derivatives of Sum, Differences, Product & Quotients, Chain Rule, Derivatives of Composite Functions, Logarithmic Differentiation, Rolle's Theorem, Mean Value Theorem, Expansion of Functions (Maclaurin's & Taylor's), Indeterminate Forms, 'L' Hospitals Rule, Maxima & Minima, Curve Tracing, Successive Differentiation & Liebnitz Theorem.
<b>Unit- IV INTEGRATION:</b>	Integral as Limit of Sum, Fundamental Theorem of Calculus (without proof.), Indefinite Integrals, Methods of Integration Substitution, By Parts, Partial Fractipns, Reduction Formulae for Trigonometric Functions, Gamma and Beta Functions(definition).
<b>Unit - V VECTOR ALGEBRA:</b>	Definition of a vector in 2 and 3 Dimensions; Double and Triple Scalar and Vector Product and physical interpretation of area and volume.

**Referential Books:**

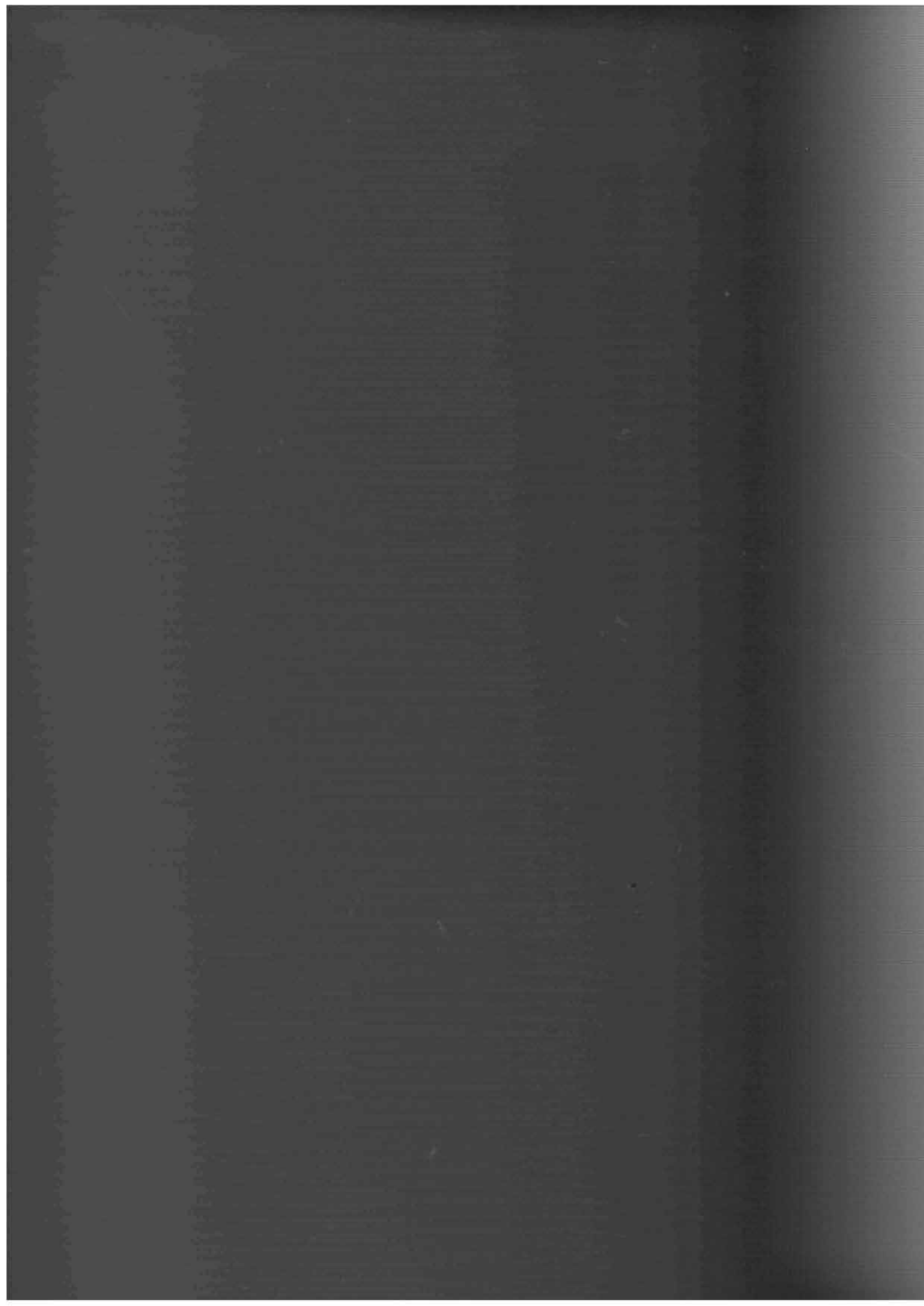
1. .S. Grewal, "Elementary Engineering Mathematics", 34th Ed., 1998.
2. Shanti Narayan, "Integral Calculus", S. Chand & Company, 1999
3. H.K. Dass, "Advanced Engineering Mathematics", S. Chand & Company, 9th Revised Edition, 2001.
4. Shanti Narayan, "Differential Caluculs", S.Chand & Company, 1998.

## BCA-102 PROGRAMMING PRINCIPLE & ALGORITHM

Unit - I	Introduction to 'C' Language Language Fundamentals	History, Structures of 'C' Programming, Function as building blocks.  Character set, C Tokens, Keywords, Identifiers, Variables, Constant, Data Types, Comments.
Unit - II	Operators  Build in Operators and function	Types of operators, Precedence and Associativity, Expression, Statement and types of statements Console based I/O and related built in I/O function: printf(), scanf(), getch(), getchar(), putchar(); Concept of header files, Preprocessor directives: #include, #define.
Unit- III	Control structures	Decision making structures: If, If-else, Nested If-else, Switch; Loop Control structures: While, DOWHILE, for, Nested for loop; Other statements: break, continue, goto, exit.
Unit- IV	Introduction to problem solving	Concept: problem solving, Problem solving techniques (Trail & Error, Brain Storming, Divide & Conquer) Steps in problem solving (Define Problem, Analyze Problem, Explore Solution) Algorithms and Flowcharts (Definitions, Symbols), Characteristics of an algorithm Conditionals in pseudo-code, Loops in pseudo code Time complexity: Big-Oh notation, efficiency Simple Examples: Algorithms and flowcharts (Real Life Examples)
Unit - V	Simple Arithmetic Problems	Addition / Multiplication of integers, Determining if a number is +ve / -ve / even / odd, Maximum of 2 numbers, 3 numbers, Sum of first n numbers, given n numbers, Integer division, Digit reversing, Table generation for n, a <sup>b</sup> , Factorial, sine series, cosine series, <sup>n</sup> C <sub>r</sub> , Pascal Triangle, Prime number, Factors of a number, Other problems such as Perfect number, GCD numbers etc (Write algorithms and draw flowchart), Swapping
Unit-VI	Functions	Basic types of function, Declaration and definition, Function call, Types of function, Parameter passing, Call by value, Call by reference, Scope of variable, Storage classes, Recursion.

### Referential Books:

1. Let us C-Yashwant Kanetkar.
2. Programming in C-Balguruswamy
3. The C programming Lang., Pearson Ecl - Dennis Ritchie
4. Structured programming approach using C- Forouzah & Ceilber Thomson learning publication.
5. Pointers in C - Yashwant Kanetkar
6. How to solve it by Computer - R.G. Dromy
7. Peter Norton's Introduction to Computers - Tata MGHill





<b>Unit - I</b>	Introduction to Computers	<ul style="list-style-type: none"> <li>✓ Introduction, Characteristics of Computers, Block diagram of computer.</li> <li>Types of computers and features, Mini Computers, Micro Computers, Mainframe Computers, Super Computers.</li> <li>Types of Programming Languages (Machine Languages, Assembly Languages, High Level Languages).</li> <li>✓ Data Organization, Drives, Files, Directories.</li> <li>✓ Types of Memory (Primary And Secondary) RAM, ROM, PROM, EPROM. Secondary Storage Devices (FD, CD, HD, Pen drive)</li> <li>✓ I/O Devices (Scanners, Plotters, LCD, Plasma Display) Number Systems</li> </ul>
<b>Unit - II</b>	Algorithm and Flowcharts	<ul style="list-style-type: none"> <li>Introduction to Binary, Octal, Hexadecimal system</li> <li>Conversion, Simple Addition, Subtraction, Multiplication</li> <li>Algorithm: Definition, Characteristics, Advantages and disadvantages, Examples</li> <li>Flowchart: Definition, Define symbols of flowchart, Advantages and disadvantages, Examples</li> </ul>
<b>Unit - III</b>	Operating System and Services in O.S.	Dos - History, Files and Directories, Internal and External Commands, Batch Files, Types of O.S.
<b>Unit - IV</b>	Windows Operating Environment	Features of MS - Windows, Control Panel, Taskbar, Desktop, Windows Application, Icons, Windows Accessories, Notepad, Paintbrush.
<b>Unit - V</b>	Editors and Word Processors	Basic Concepts, Examples: MS-Word, Introduction to desktop publishing.
<b>Unit - VI</b>	Spreadsheets and Database packages	Purpose, usage, command, MS-Excel, Creation of files in MS-Access, Switching between application, MS-PowerPoint.

**Referential Books:**

1. Fundamental of Computers - By V.Rajaraman B.P.B. Publications
2. Fundamental of Computers - By P.K. Sinha
3. Computer Today- By Suresh Basandra
4. Unix Concepts and Application - By Sumitabha Das
5. MS-Office 2000(For Windows) - By Steve Sagman
6. Computer Networks - By Tennenbum Tata MacGrow Hill Publication

## BCA-104 PRINCIPLE OF MANAGEMENT

Unit - I	Nature of Management:	Meaning, Definition, its nature purpose, importance & Functions, Management as Art, Science & Profession- Management as social System Concepts of management-Administration-Organization, Management Skills, Levels of Management.
Unit - II	Evolution of Management Thought:	Contribution of F.W.Taylor, Henri Fayol, Elton Mayo, Chester Barhard & Peter Drucker to the management thought. Business Ethics & Social Responsibility: Concept, Shift to Ethics, Tools of Ethics.
Unit- III	Functions of Management: Part-I	Planning - Meaning- Need & Importance, types, Process of Planning, Barriers to Effective Planning, levels - advantages & limitations. Forecasting- Need & Techniques Decision making-Types - Process of rational decision making & techniques of decision making Organizing - Elements of organizing & processes: Types of organizations, Delegation of authority - Need, difficulties Delegation - Decentralization Staffing - Meaning & Importance Direction - Nature - Principles Communication - Types & Importance
Unit- IV	Functions of Management: Part-II	Motivation - Importance - theories Leadership - Meaning -styles, qualities & function of leader Controlling - Need, Nature, importance, Process & Techniques, Total Quality Management Coordination - Need - Importance
Unit - V		Management of Change: Models for Change, Force for Change, Need for Change, Alternative Change Techniques, New Trends in Organization Change, Stress Management.
Unit - VI	: Strategic Management	Definition, Classes of Decisions, Levels of Decision, Strategy, Role of different Strategist, Relevance of Strategic Management and its Benefits, Strategic Management in India

### Referential Books :

1. Essential of Management - Horold Koontz and Iteinz Weibrich- McGrawhills International
2. Management Theory & Practice - J.N.Chandan
3. Essential of Business Administration - K.Aswathapa, Himalaya Publishing House
4. Principles & practice of management - Dr. L.M.Parasad, Sultan Chand & Sons - New Delhi
5. Business Organization & Management - Dr. Y.K.Bhushan
6. Management: Concept and Strategies By J.S. Chandan, Vikas Publishing
7. Principles of Management, By Tripathi, Reddy Tata McGraw Hill
8. Business organization and Management by Talloo by Tata McGraw Hill
9. Business Environment and Policy - A book on Strategic Management/ Corporate Planning By Francis Cherunilam Himalaya Publishing House 2001 Edition

<b>Unit-I</b>	Means of Communication:	Meaning and Definition - Process - Functions - Objectives - Importance - Essentials of good communication - Communication barriers, 7C's of Communication
<b>Unit - II</b>	Types of Oral Communication:	Meaning, nature and scope - Principle of effective oral communication - Techniques of effective speech - Media of oral communication (Face-to-face conversation - Teleconferences - Press Conference - Demonstration - Radio Recording - Dictaphone - Meetings - Rumour - Demonstration and Dramatisation - Public address system - Grapevine - Group Discussion - Oral report - Closed circuit TV). The art of listening - Principles of good listening.
<b>Unit- III</b>	Written Communication	Purpose of writing, Clarity in Writing, Principle of Effective writing, Writing Techniques, Electronic Writing Process
<b>Unit- IV</b>	Business Letters & Reports:	Need and functions of business letters - Planning & layout of business letter - Kinds of business letters - Essentials of effective correspondence, Purpose, Kind and Objective of Reports, Writing Reports.
<b>Unit - V</b>	Drafting of business letters:	Enquiries and replies - Placing and fulfilling orders - Complaints and follow-up Sales letters - Circular letters Application for employment and resume
<b>Unit - VI</b>	Information Technology for Communication: Topics Prescribed for workshop/skill lab	Word Processor- Telex - Facsimile(Fax) - E-mail- Voice mail - Internet - Multimedia - Teleconferencing - Mobile Phone Conversation - Video Conferencing -SMS - Telephone Answering Machine - Advantages and limitations of these types. Group Discussion, Mock Interview, Decision Making in a Group

**Referential Books :**

- 1) Business Communication - K.K.Sinha - Galgotia Publishing Company, New Delhi.
- 2) Media and Communication Management - C.S. Rayudu - Hikalaya Publishing House, Bombay.
- 3) Essentials of Business Communication - Rajendra Pal and J.S. Korhalli- Sultan Chand & Sons, New Delhi.
- 4) Business Communication (Principles, Methods and Techniques) Nirmal Singh - Deep & Deep Publications Pvt. Ltd., New Delhi.
- 5) Business Communication - Dr.S.V.Kadvekar, Prin.Dr.C.N.Rawal and Prof.Ravindra Kothavade-Diamond Publications, Pune.
- 6) Business Correspondence and Report Writing - R.C. Sharma, Krishna Mohan - Tata McGraw-Hill Publishing Company Limited, New Delhi.
- 7) Communicate to Win - Richard Denny - Kogan Page India Privat Limited, New Delhi.
- 8) Modern Business Correspondence - L.Gartside - The English Language Book Society and Macdonald and Evans Ltd.
- 9) Business Communication - M.Balasubrahmanyam -Vani Education Books. 10) Creating a Successful CV -Siman Howard - Dorling Kidnersley.

**106P Computer Laboratory And Practical Work Of Office Automation**

Practical will be based on Paper Office Automation: Covers UNIT-III, UNIT-IV, UNIT-V, UNIT-VI of Syllabus

**107P Computer Laboratory and Practical Work of Programming Principle & Algorithm**

Practical will be based on Paper Programming Principle & Algorithm: Covers UNIT-III, UNIT-IV, UNIT-V, UNIT-VI of Syllabus



## QUALIFYING PAPER

### ENVIRONMENTAL STUDIES (CODE-008)

#### UNIT-1: THE MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES

Definition, Scope and Importance, Need for Public Awareness.

#### UNIT-2: NATURAL RESOURCES

- ❖ Renewable and Non-renewable Resources:

##### Natural resources and associated problems: -

- FOREST RESOURCES: use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
- WATER RESOURCES: use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
- MINERAL RESOURCES: use and exploitation, environmental effects of extracting and using mineral resources, case studies.
- FOOD RESOURCES: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
- ENERGY RESOURCES: Growing energy needs, renewable and nonrenewable energy sources, use of alternate energy sources, case studies
- LAND RESOURCES: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

- ❖ Role of an individual in conservation of natural resources.
- ❖ Equitable use of resources for sustainable lifestyles

#### UNIT-3: ECOSYSTEMS

- ❖ Concept of an ecosystem
- ❖ Structure and function of an ecosystem
- ❖ Producers, consumers and decomposers
- ❖ Energy flow in the ecosystem
- ❖ Ecological succession

- ❖ Food chains, food webs and ecological pyramids
- ❖ Introduction, types, characteristic features, structure and function of the following ecosystem: -
  - a) Forest ecosystem
  - b) Grassland ecosystem
  - c) Desert ecosystem
  - d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

#### **UNIT-4: BIODIVERSITY AND ITS CONSERVATION**

- ❖ Introduction – Definition: genetic, species and ecosystem diversity.
- ❖ Biogeographical classification of India
- ❖ Value of biodiversity: Consumptive use, productive use, social, ethical, and aesthetic and option values.
- ❖ Biodiversity at global, National and local levels.
- ❖ India as a mega-diversity nation
- ❖ Hot-spots of biodiversity.
- ❖ Threats to biodiversity: Habitat loss, poaching of wildlife, man-wildlife conflicts.
- ❖ Endangered and endemic species of India
- ❖ Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

#### **T-5: ENVIRONMENTAL POLLUTION**

##### **DEFINITION:**

- ❖ Causes, effects and control measures of: -
  - a) Air pollution
  - b) Water pollution
  - c) Soil pollution
  - d) Marine pollution
  - e) Noise pollution
  - f) Thermal pollution
  - g) Nuclear pollution

❖ Solid waste Management: Causes, effects and control measures of urban and industrial wastes.

❖ Role of an individual in prevention of pollution

❖ Pollution case studies

❖ Disaster Management: Floods, earthquake, cyclone and landslides.

#### **-6: SOCIAL ISSUES AND THE ENVIRONMENT**

❖ From Unsustainable to Sustainable development

❖ Urban problems related to energy.

❖ Water conservation, rain water harvesting, watershed management

❖ Resettlement and rehabilitation of people; its problems and concerns. Case Studies

- ❖ Environmental Ethics: Issues and possible solutions
- ❖ Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies.
- ❖ Wasteland reclamation.
- ❖ Consumerism and waste products
- ❖ Environment Protection Act.
- ❖ Air (Prevention and Control of Pollution) Act
- ❖ Water (Prevention and Control of Pollution) Act
- ❖ Wildlife Protection Act
- ❖ Forest Conservation Act
- ❖ Issues involved in enforcement of environmental legislation
- ❖ Public awareness

#### **UNIT-7: HUMAN POPULATION AND THE ENVIRONMENT**

- ❖ Population growth, variation among nations.
- ❖ Population explosion: Family Welfare Programme.
- ❖ Environment and human health
- ❖ Human Rights
- ❖ Value Education
- ❖ Women and Child Welfare
- ❖ Role of Information Technology in Environment and human health
- ❖ Case Studies

#### **UNIT-8: FIELD WORK**

- ❖ Visit to a local area to document environmental assets-river / forest / grassland / hill / mountain.
- ❖ Visit to a local polluted site – Urban / Rural / Industrial / Agricultural
- ❖ Study of common plants, insects, birds.
- ❖ Study of simple ecosystems-pond, river, hill slopes, etc. (Field work Equal to 5 lecture hours).