SCHEME OF EXAMINATION

&

DETAILED SYLLABUS

For

BCA
(Bachelor in Computer Application)

(W.e.f. 2019– 2020)

KALINGA UNIVERSITY
RAIPUR

FACULTY OF INFORMATION TECHNOLOGY

Kalinga University, Naya Raipur,

Chhattisgarh

Kalinga University, Raipur
Bachelor in Computer Application
w.e.f. 2019-20 session

Semester I					
Code No.	Paper	Credits	End Semester Exam	Internal Marks	Total marks
BCA 101	Mathematics - I	4	70	30	100
BCA 102	Business Communication	3	70	30	100
BCA 103	Programming with C	4	70	30	100
BCA 104	Fundamentals of Information Technology	4	70	30	100
BCA 105	Principles of Management	4	70	30	100
BCA 106-P	Fundamentals of IT Lab	1	30	20	50
BCA 107-P	Programming with C Lab	1	30	20	50
	Total	21	410	190	600

Semester II					
Code No.	Paper	Credits	End Semester Exam	Internal Marks	Total marks
BCA 201	Mathematics - II	4	70	30	100
BCA 202	Business Organization	4	70	30	100
BCA 203	Digital Electronics	4	70	30	100
BCA 204	Data Structures using C	4	70	30	100
BCA 205	Database Management Systems	4	70	30	100
BCA 206-P	Practical - II (Lab)	1	30	20	50
	Total	21	380	170	550

Semester III					
Code No.	Paper	Credits	End Semester Exam	Internal Marks	Total marks
BCA 301	Web Designing	4	70	30	100
BCA 302	Computer Architecture	4	70	30	100
BCA 303	Front End Design Tools	4	70	30	100
BCA 304	Financial Accounting	4	70	30	100
BCA 305	Object Oriented Programming using C++	4	70	30	100
BCA 306-P	Practical - III	1	30	20	50
	Total	21	380	170	550

Semester IV					
Code No.	Paper	Credits	End Semester Exam	Internal Marks	Total marks
BCA 401	Management Information Systems	4	70	30	100
BCA 402	Structured Systems Analysis and Design	4	70	30	100
BCA 403	Object Technologies & Programming using java	4	70	30	100
BCA 404	Operating Systems	4	70	30	100
BCA 405	Business Economics	4	70	30	100
BCA 406-P	Practical - IV	1	30	20	50
	Total	21	380	170	550
	Summer Training will be held for 4 weeks after the end of fourth semester.				
Viva-Voce will be conducted in fifth semester.					

Semester V					
Code No.	Paper	Credits	End Semester Exam	Internal Marks	Total marks
BCA 501	Computer Networks	4	70	30	100
BCA 502	.Net Programming	4	70	30	100
BCA 503	Linux Environment	4	70	30	100
BCA 504	Software Engineering	4	70	30	100
BCA 505-P	Practical -V	1	30	20	50
BCA 506	* Summer Project/Training	1	70	30	100
	Total	18	380	170	550
	*Evaluation will be based on Summer Training held after fourth semester and will be conducted by the college committee only.				

Semester VI					
Code No.	Paper	Credits	End Semester Exam	Internal Marks	Total marks
BCA 601	Artificial Intelligence	4	70	30	100
BCA 602	Mobile Computing	4	70	30	100
BCA 603	Computer Graphics & Multimedia Applications	4	70	30	100
BCA 604	E-Commerce	4	70	30	100
BCA 605-P	Practical -VI	1	30	20	50
BCA 606	Major Project	6	70	30	100
BCA 607	Environmental Science	3	70	30	100
	Total	26	450	200	650

Program Educational Objectives

- PEO 1 Graduates of the program will be a successful professional and quick learner in diverse fields of Computer Science.
- PEO 2 Graduate of the program will be capable to adapt innovative computing technology.
- PEO 3 Graduate of the program will develop effective leadership and communication skills so as to work harmoniously work as a team member.
- PEO 4 Graduates of the program will work productively as a Computer professional to develop and test Computer Software and Applications using Modern Tools.
- PEO 5 Graduate of the program will be capable of ethical responsibility and work for the betterment of the society.

Program Outcomes

- PO 1 Ability to apply knowledge of Computer Science and its Applications.
- PO 2 an ability to design, implements, and evaluate a computer based system to meet desired needs within realistic constraints.
- PO 3 an ability to identify, formulate, and develop solutions to computational challenges.
- PO 4 an ability in the understanding of professional, ethical, legal, security and social issues and responsibilities.
- PO 5 An ability to function effectively in teams and individually to accomplish a common goal.

Program-Specific Outcomes

- PSO 1 An ability to use innovative tools, techniques and skills necessary for developing multidisciplinary projects.
- PSO 2 Ability to use knowledge gained for solving complex problems using Computational sciences.

Mathematics -1

COURSE OBJECTIVE:

The course is aimed to develop the basic Mathematical skills of engineering students that are imperative for effective understanding of engineering subjects. The topics introduced will serve as basic tools for specialized studies in many fields of engineering and technology. i.e.: Matrices, Partial Derivatives, Complex Numbers, Intermediate forms and Taylor Series, Successive differentiation and Numerical methods.

COURSE OUTCOME:

1. Solve linear system equation
2. Determine the Eigen values and vectors of a matrix
3. Determine the power series expansion of a function
4. Estimate the maxima and minima of multivariable functions.
5. Solve any given first order ordinary differential equation.
6. Solve any higher order linear ordinary differential equation with constant coefficients.

UNIT I

SETS: Sets, Subsets, Equal Sets Universal Sets, Finite and Infinite Sets, Operation on Sets, Union, Intersection and Complements of Sets, Cartesian product, Cardinality of Set, Simple Applications.

DETERMINANTS: Definition, Minors, Cofactors, Properties of Determinants, Applications of determinants in finding area of triangle, Solving a system of linear equations.

MATRICES: Definition, Types of Matrices, Addition, Subtraction, Scalar Multiplication and Multiplication of Matrices, Adjoint, Inverse, solving system of linear equation Cramer's Rule.

UNIT II

RELATIONS AND FUNCTIONS: Properties of Relations, Equivalence Relation, Partial Order Relation Function: Domain and Range, Onto, Into and One to One Functions, Composite and Inverse Functions.

LIMITS & CONTINUITY: Limit at a Point, Properties of Limit, Computation of Limits of Various Types of Functions, Continuity of a function at a Point, Continuity Over an Interval, Sum, product and quotient of continuous functions, Intermediate Value Theorem, Type of Discontinuities.

UNIT III

DIFFERENTIATION: Derivative of a function, Derivatives of Sum, Differences, Product & Quotient of functions, Derivatives of polynomial, trigonometric, exponential, logarithmic, inverse trigonometric and implicit functions, Logarithmic Differentiation, Chain Rule and differentiation by substitution.

UNIT IV

INTEGRATION: Indefinite Integrals, Methods of Integration by Substitution, By Parts, Partial Fractions, Integration of Algebraic and Transcendental Functions, Reduction Formulae for simple and Trigonometric Functions, Definite Integral as Limit of Sum, Fundamental Theorem of Integral Calculus, Evaluation of definite integrals by substitution, using properties of definite integral,

Reference Books:
1. C.L.Liu: Elements of Discrete Mathematics, McGraw Hill.
2. Lipschutz, Seymour: Discrete Mathematics, Schaum's Series
3. Babu Ram: Discrete Mathematics, Vinayek Publishers, New Delhi.
4. Trembley, J.P & R. Manohar: Discrete Mathematical Structure with Application to Computer Science, TMH.
5. Kenneth H. Rosen: Discrete Mathematics and its applications, TMH.
6. Doerr Alan & Levasseur Kenneth: Applied Discrete Structures for Computer Science, Galgotia Pub. Pvt. Ltd.
7. Gersting: Mathematical Structure for Computer Science, WH Freeman & Macmillan.

BCA 102

External Marks:70
Internal Marks: 30
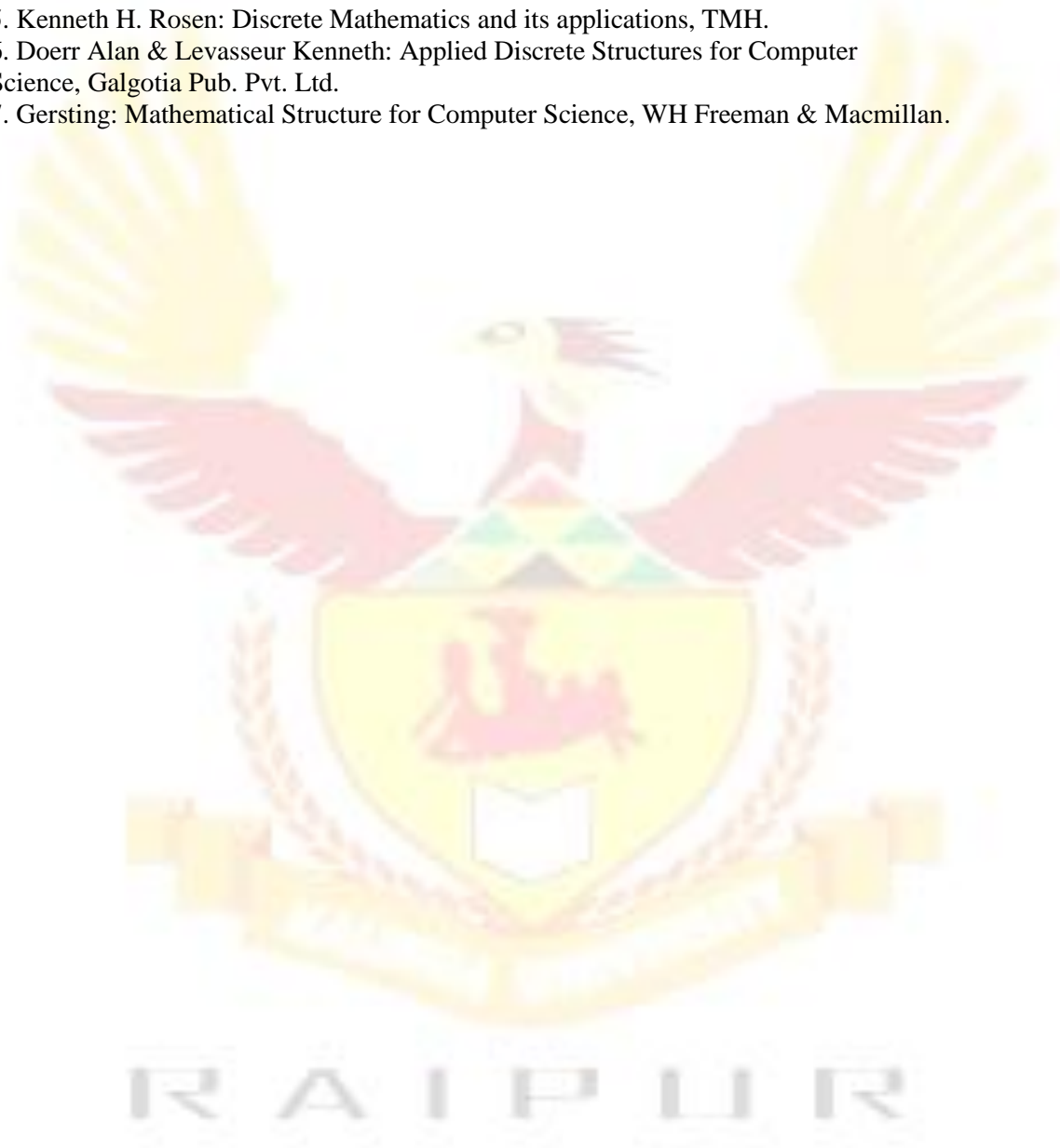
Business Communication

COURSE OBJECTIVE:

1. Provide an overview of Prerequisites to Business Communication.
2. Understanding uses the basic mechanics of Grammar.
3. Provide an outline to effective Organizational Communication.
4. Underline the nuances of Business communication

COURSE OUTCOME:

1. Solve linear system equation
2. Determine the Eigen values and vectors of a matrix
3. Determine the power series expansion of a function
4. Estimate the maxima and minima of multivariable functions.
5. Solve any given first order ordinary differential equation.
6. Solve any higher order linear ordinary differential equation with constant coefficients.

UNIT I

Unit-I

Fundamental of Grammar and their Usage: How to Improve Command over Spoken and Written English with Stress on Noun, Verb, Tense and Adjective. Sentence Errors, Punctuation, Vocabulary Building to Encourage the Individual to Communicate Effectively, Common Errors in Business Writing.

Unit-II

Introduction to Business Communication: Basic Forms of Communication, Process of Communication, Principles of Effective Business Communication, 7Cs; Media of Communication: Types of Communication: Barriers of Communication (Practical exercise in communication)

Unit-III

Business letter writing: Need, Functions and Kinds, Layout of Letter Writing, Types of Letter Writing: Persuasive Letters, Request Letters, Sales Letters, Complaints and Adjustments; Departmental Communication: Meaning, Need and Types: Interview Letters, Promotion. Letters, Resignation Letters, News Letters, Circulars, Agenda, Notice, Office Memorandums, Office Orders, Press Release.

Unit-IV
Business Etiquettes and Public Speaking: Business Manners. Body Language Gestures, Email and Net Etiquettes, Etiquette of the Written Word, Etiquettes on the Telephone, Handling Business Meetings; Introducing Characteristic, Model Speeches, Role Play on Selected Topics with Case Analysis and Real Life Experiences.

Reference Books

1. Boove, C.L., Thill, J.V., and Chaturvedi, M., (2009) Business Communication Today, Pearson Education.
2. Murphy and Hildebrandt, (2008) Effective Business Communication, McGraw Hill Education.
3. Krizan, A. C. Buddy, and Merrier, Patricia (2008) Effective Business Communication, 7th Edition, Cengage Learning.
4. Lesikar, (2009), Business Communication: Making Connections in a Digital World, McGraw Hill Education.
5. McGraw, S. J., (2008) Basic Managerial Skills for All, 8th edition, Prentice Hall of India.
6. Wren & Martin, (2008), English Grammar and Composition, Sultan chand & Sons.

BCA 103   External Marks:70
                                                              Internal Marks: 30

Programming with C

COURSE OBJECTIVE:

The course is oriented to those who want to advance structured and procedural programming understating and to improve C programming skills. The major objective is to provide students with understanding of code organization and functional hierarchical decomposition with using complex data types.

COURSE OUTCOME:

1. Understanding a functional hierarchical code organization.
2. Ability to define and manage data structures based on problem subject domain.
3. Ability to work with textual information, characters and strings
4. Understanding a concept of object thinking within the framework of functional model.
5. Understanding a concept of functional hierarchical code organization.
6. Understanding a defensive programming concept and ability to handle possible errors during program execution.

UNIT I
C basics: C character set, Identifiers and keywords, Data types, constants, variables and arrays, declarations, expressions statements, symbolic constants, compound statements, arithmetic operators, unary operators, relational and logical operators, assignment operators, conditional operators, bit operators.

UNIT – II
C constructs: If statement, if….else statement, if…..else if….else statement, while statement, do….while statement, for statement, switch statement, nested control statement, break operator, continue operator, comma operator, goto statement.

UNIT – III
C Functions: Function: declaration, definition & scope, recursion, call by value, call by reference. Storage Classes: automatic, external (global), static & registers.

UNIT – IV
Arrays: Arrays, pointers, array & pointer relationship, pointer arithmetic, dynamic memory allocation, pointer to arrays, array of pointers, pointers to functions, array of pointers to functions, Preprocessor directives: #include, #define, macro's with arguments, the operators # and ##, conditional compilations, multiple file programming.

UNIT – V
Structures: Structures, unions, structure passing to functions, bit fields, file handling [text (ascii), binary], Standard library functions from stdio.h, stdlib.h, conio.h, ctype.h, math.h, string.h, process.h., Macro Defination in C.

Text book:

1. Yashwant Kanetkar, "Let us C", BPB Publications, 2002

Reference Books:

1. E. BalaGuruswamy, "Programming in ANSI C", TMH, 1999.
2. Al Kelly and Ira Pohl, "A Book on C", (4th Ed.), Addison Wesley, 1999.
3. B. Kernighan and D. Ritchie, "The ANSI C Programming Language", PHI., 2000.

<div style="text-align:right">External Marks:70
Internal Marks: 30</div>

Fundamentals of Information Technology

COURSE OBJECTIVE:

The main objective is to introduce IT in a simple language to all undergraduate students, regardless of their specialization. It will help them to pursue specialized programs leading to technical and professional careers and certifications in the IT industry. The focus of the subject is on introducing skills relating to IT basics, computer applications, programming, interactive media, Internet basics etc.

COURSE OUTCOME:

1. Understand basic concepts and terminology of information technology.
2. Studying structure of personal computers and their operations.
3. Ability to understand issues regarding information security.

UNIT – I

Introduction to Computers:
The evolution of computers - Computer Generation from First Generation to Fifth Generation, Classifications of Computers - Micro, Mini, Mainframe and Super Computers, Distributed Computer System, Parallel Computers.

Computer Hardware – Major Components of a Digital Computer, Block Diagram of Computer, Input-Output devices, Description of Computer Input Units, Output Units, CPU.

Computer Memory - Memory Cell, Memory Organization, Read Only Memory, Serial Access Memory, Cache Memory, Physical Devices Used to construct Memories, Magnetic Hard disk, floppy Disk Drives, Compact Disk Read Only Memory, Magnetic Tape Drives.

UNIT – II

Number System:
Decimal, Binary, Octal, Hexa-decimal. Conversion - Decimal to all other number systems, Binary to octal and Hexa Decimal, Addition of binary numbers, Binary subtraction, Use of complements to represent negative numbers, Conversion of a binary fraction to a decimal fraction and decimal to binary fraction, Binary Coded Decimal(BCD), ASCII Codes, EBCDIC codes, Gray codes, Unicodes.

Algorithm and Flowcharts:
Algorithm: Definition, Characteristics, Advantages and disadvantages, Examples
Flowchart: Definition, Define symbols of flowchart, Advantages and disadvantages, Examples
Pseudo Code.

UNIT – III

Computer Software:
System software, assemblers, compilers, interpreters, linkers Elementary , Operating System concepts, different types of operating systems, Application Software.
Introduction to MS Office (MS-Word, MS PowerPoint, MS-Excel)
Computer Programming and Languages: Algorithms, flow chart, decision tables, pseudo code, Low level languages and introduction to high level languages.

UNIT – IV

Data Communication and Computer Networks:
Data Transmission mode, Data transmission media, Digital and Analog Transmission
What is computer Network? Network types, Network Topologies, Communication Protocol, OSI Model, TCP/IP model.

UNIT – V

The Internet:
Definition, Brief History, Network Types (LAN, WAN and MAN), Client and Servers, Intranet, Extranet.
Basic Services, Email, File Transfer Protocol, Telnet, Usenet News, Terminologies related to Internet:
Protocol, Domain name, IP address, URL, World Wide Web.
Overview of various services on Internet: E-mail, FTP, Telnet, Chat, Instant Messaging
Internet Search Tools: Gopher, Archie, World Wide Web,Internet Service Provider.
WWW Browsers: Line Browsers, Graphical Browsers, Java Enabled Browsers.

Text books:

1. Alex Leon & Mathews Leon,"Fundamentals of InformationTechnology",LeonTechworld, 1999.
2. Vikas Gupta, "Comdex Computer Kit", Wiley Dreamtech, Delhi, 2004
3. P. K. Sinha & Priti Sinha , "Computer Fundamentals", BPB Publications, 1992.

Reference Books:

1. V. Raja Raman, "Introduction to Computers", PHI, 1998.
2. Alex Leon & Mathews Leon, "Introduction to Computers", Vikas Publishing House, 1999.
3. Norton Peter, "Introduction to computers", 4th Ed., TMH, 2001.

Principles of Management

COURSE OBJECTIVE:

The objective is to acquaint undergraduate students with concept of management and enable to gain the understanding of process of business management.

COURSE OUTCOME:

1. Understand the functioning of business organization
2. Understand the functions and process business management

Unit I

Introduction: Concept, Nature, Process and Significance of Management; Managerial levels, skills, Functions and Roles; Management vs. Administration; Coordination as Essence of Management; Development of Management Thought: Classical, Neo-Classical, Behavioral, Systems and Contingency Approaches.

Unit II

Planning: Nature, Scope and Objectives of Planning; Types of plans; Planning Process; Business forecasting; MBO: Concept, Types, Process and Techniques of Decision-Making; Bounded Rationality. Organizing: Concept, Nature, Process and Significance; Principles of an Organization; Span of Control; Departmentation; Types of an Organization; Authority-Responsibility; Delegation and Decentralization; Formal and Informal Organization.

Unit III

Staffing: Concept, Nature and Importance of Staffing.
Motivating and Leading: Nature and Importance of Motivation; Types of Motivation; Theories of Motivation: Maslow, Herzberg, X, Y and Z; Leadership: Meaning and Importance; Traits of a leader; Leadership Styles – Likert's Systems of Management, Tannenbaum & Schmidt Model and Managerial Grid.

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Unit IV

Controlling: Nature and Scope of Control; Types of Control; Control Process; Control Techniques – Traditional and Modern; Effective Control System.

Reference Books:

1. Robbins, (2009). Fundamentals of Management: Essentials Concepts and Applications, 6th edition, Pearson Education.
2. Stoner, Freeman and Gilbert Jr. (2010) Management, 8th Edition, Pearson Education.
3. Koontz, H. (2008), Essentials of Management, McGraw Hill Education.

4. Gupta, C.B. (2008), Management Concepts and Practices, Sultan Chand and Sons, New Delhi.
5. Ghillyer, A, W., (2008) Management- A Real World Approach, McGraw Hill Education.
6. Mukherjee, K, (2009), Principles of Management, 2nd Edition, McGraw Hill Educatio

BCA 106-P   External Marks:30
                                                     Internal Marks: 20

FUNDAMENTALS OF IT LAB

MS-WORD
1. Text Manipulations
2. Usage of Numbering, Bullets, Tools and Headers
3. Usage of Spell Check and Find and Replace
4. Text Formatting
5. Picture Insertion and Alignment
6. Creation of Documents Using Templates`
7. Creation of Templates
8. Mail Merge Concept
9. Copying Text and Picture From Excel
10. Creation of Tables, Formatting Tables
11. Splitting the Screen
12. Opening Multiple Document, Inserting Symbols in Documents

MS-EXCEL
1. Creation of Worksheet and Entering Information
2. Aligning, Editing Data in Cell
3. Excel Function (Date, Time, Statistical, Mathematical, Financial Functions)
4. Changing of Column Width and Row Height (Column and Range of Column)
5. Moving, copying, Inserting and Deleting Rows and Columns
6. Formatting Numbers and Other Numeric Formats
7. Drawing Borders Around Cells
8. Creation of Charts Raising Moving
9. Changing Chart Type
10. Controlling the Appearance of a Chart

MS -POWER POINT
Working With Slides
1. Creating, saving, closing presentation
2. Adding Headers and footers
3. Changing slide layout
4. Working fonts and bullets
5. Inserting Clip art: working with clipart,
6. Applying Transition and animation effects
7. Run and Slide Show

DOS
1. Basics of DOS
2. DOS (Internal & External Commands)
3. Use of Wild Card Character

Programming in C –Lab

Programs using Basic Constructs: Fundamental data types, qualifiers- long, short, unsigned, input/output functions – scanf(), printf(), Arithmetic expressions, Evaluation of integer, real and mixed mode arithmetic expressions, truncation effect, type casting, relational and logical expressions, Conditional operators, trigonometric functions- sin(), cos(), tan(), mathematical functions – abs(), sqrt(), round() defined in math.h, printing formatted outputs using width specifier.

Programs using control structures: if, switch, for, while, do…while, nested structures, break and continue. Sample programs should include printing of Fibonacci numbers, prime numbers, check for armstrong numbers, summation series – exp(x), sin series etc and verification of result using built in functions, printing pyramid like pattern & other similar patterns using nested loops.

Programs using Arrays: Array based programs – Creation of array containing prime numbers, matrix addition, matrix multiplication, transpose of a matrix, array sorting, preparing rank lists based on marks, searching of arrays(linear) for finding price of an item. static initialization of arrays.

String manipulation programs : reading strings using %s, gets(), getchar(), copying one string into another, counting number of characters, vowels, words etc, searching for substring, string manipulation using functions in string.h and ctype.h.

User Defined Functions: Programs using return type functions, void type functions, example program using recursive functions, array sorting program using function with call by reference, function to copy one string into another, menu driven program using modular approach in programming.

Program using structures: array of structures, dictionary search program using structure containing arrays and array of structures.

Program using pointer : initialization, pointer arithmetic - swap function to interchange two locations, array manipulation using pointers- sorting list of names using pointer array, string handling using pointers, Simple program using dynamic memory allocation.

Program to create a data file, reading a data file , search for record(serial search) and displaying report, simple program using command line arguments- to copy one file into another by giving file names as arguments, sorting list of names provided at command line.

SEMESTER-II

Mathematics II

COURSE OBJECTIVE:

To introduce the basic concepts required to understand, construct, solve and interpret differential equations. To teach methods to solve differential equations of various types. To give an ability to apply knowledge of mathematics on engineering problems

 COURSE OUTCOME:

1. Solve linear differential equations using Laplace transforms.
2. Evaluate multiple integrals and improper integrals.
3. Convert line integrals to area integrals.
4. Convert surface integrals to volume integrals.
5. Determine potential functions for irrotational force fields.

UNIT-I
Basic Statistics: Measure of Central Tendency, Preparing frequency distribution table,Mean, Mode, Median, Measure of Dispersion: Range, Variance and Standard Deviations, Correlation and Regression.

UNIT-II
Algorithm: Algorithms, merits and demerits, Exponentiation, How to compute fast exponentiation. Linear Search, Binary Search, "Big Oh" notation, Worst case, Advantage of logarithmic algorithms over linear algorithms, complexity.
Graph Theory: Graphs, Types of graphs, degree of vertex, sub graph, isomorphic and homeomorphic graphs, Adjacent and incidence matrices, Path Circuit ; Eulerian, Hamiltonian path circuit.

UNIT-III
Tree: Trees, Minimum distance trees, Minimum weight and Minimum distance spanning trees.
Recursion: Recursively defined function.
Merge sort, Insertion sort, Bubble sort, and Decimal to Binary.

UNIT-IV
Recurrence Relations: Linear Homogeneous Recurrence Relation, Recursive procedures.
Number Theory: Principle of Mathematical induction**,** GCD, Euclidean algorithm, Fibonacci numbers, congruences and equivalence relations, public key encryption Schemes.

Reference Books

1. Gupta S.P. and Kapoor, V.K., Fundamentals of Applied statistics, Sultan Chand & Sons, 1996.
2. Gupta S.P. and Kapoor, V.K., Fundamentals of Mathematical statistics, Sultan Chand and Sons, 1995.
3. Graybill, Introduction to Statistics, McGraw.
4. Anderson, Statistical Modelling, McGraw.
5. Babu Ram : Discrete Mathematics
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External Marks:70
                                                                                                  Internal Marks: 30

Business Organization

COURSE OBJECTIVE:

The course will begin with study of general organization theory and the behavior of groups and individuals within organizations, including the processes of team work/team building, and then focus on applications to specific business contexts with particular reference to the fundamentals of management, the wider business environment and an introduction to marketing within that environment. Case studies will develop an understanding of the practical application of theoretical concepts.

COURSE OUTCOME:

1. Explain the basic fundamentals of the business environment, organizational theory and marketing, including capacity to recognize and use relevant terminology.
2. Read, understand and critically evaluate the information contained in relevant academic texts.
3. Organize and present information to a satisfactory standard in oral presentations, essays and reports.
4. Analyze and critically evaluate case studies in at least one of the topic areas, including its relevance to course topics.
5. Contribute to a team project in an effective manner.
6. Describe the processes underlying diversity within an organization.

Unit I

Introduction: Concept, Nature and Scope of Business; Concept of Business as a System; Business and Environment Interface; Business Objectives; Profit Maximization vs. Social Responsibility of Business; Introduction to Business Ethics and Values.

Unit II

Business Enterprises: Entrepreneurship – Concept & Nature; Locations of Business Enterprise (Weber's Theory); Government Policy on Industrial Location. Forms of Business Organization: Sole Proprietorship, Joint Hindu Family Firm, Partnership firm, Joint Stock Company, Cooperative Organization; Types of Companies, Choice of form of organization; Promotion of a company – Stages in formation; documentation (MOA, AOA).

Unit III

Small Business: Scope and Role, Government Policies. Government & Business Interface – Rational and forms of Government and Business Interface.

Unit IV

Multinationals: Concept and role of MNCs; Transactional Corporations (TNCs); International Business Risks. Business Combinations: Concept and causes of business combinations; Chambers of Commerce and Industry in India; FICCI, CII, ASSOCHAM, AIMO, etc.

Reference Books

1. Robert; Lawrence, (2009) Modern Business Organization, McMillan India.
2. Tulsian, P. C., (2009) Business Organization & Management, 2nd edition, Pearson Education.
3. Basu, C. R. (2008) Business Organization and Management, McGraw Hill Education.
4. Basu, C, (2010) Business Organization and Management, 1st Edition, McGraw Hill Education.
5. Gupta, C.B., (2010) Modern Business Organization and Management, Dhanpat Rai & Sons.
6. Agarwal, N. P., Tailor, R. K., (2008) Business Organization And Management, Dhanpat Rai & Sons

Digital Electronics

COURSE OBJECTIVE:

1. Understanding the disciplines of analog and digital electronic logic circuits.
2. Various Number system and Boolean algebra then design and implementation of combinational circuits.
3. Design and implementation of Sequential circuits, Hardware description language.

COURSE OUTCOME:

1. Understand the concepts of various components to design stable analog circuits.
2. Represent numbers and perform arithmetic operations.
3. Minimize the Boolean expression using Boolean algebra and design it using logic gates.
4. Analyze and design combinational circuit.
5. Design and develop sequential circuits.
6. Translate real world problems into digital logic formulations using VHDL.

UNIT-I

Boolean Algebra : Basics Laws of Boolean Algebra, Logic Gates, Simplifications of Boolean equations using K-maps, Code Conversion, (Binary, Octal, Hexadecimal), Overview of Gray codes and Excess – 3 codes.

UNIT-II

Arithmetic Circuits Adder, Subtractor, Parallel binary adder/Subtractor, binary multiplier and divider. Combinational Circuits Multiplexers, De-Multiplexers, decoders, encoders, Design of code converters.

UNIT-III

Flip-flops -S-R, D, J-K, T, Clocked Flip -flop, Race around condition, Master slave Flip-Flop, Realisation of one flip-flop using other flip-flop.
Shift Registers, Serial-in-serial-out, serial-in-parallel-out, parallel-in-serial-out and parallel-in-parallel-out,Bi-directional shift register.

UNIT-IV

Counters- Ripple counter, Synchronous Counter, Modulo Counters, Ring Counter, Twisted Ring Counter.Memory Devices **-** RAM, ROM, PAL & PLA

Text Books:
1. Moris Mano, "Digital Logic and Computer Design", PHI Publications, 2002
2. R. P. Jain, "Modern Digital Electronics", TMH, 3rd Edition, 2003.

References Books :
1. R.L.Tokheim, "Digital Electronics, Principles and Applications", Tata McGraw Hill, 1999.
2. W.Gothman, "Digital electronics", PHI.
3. S. Salivahanan & S. Arivyhgan. "Digital circuits and design", Vikas Publication, 2001
4. Malvino Leach, "Digital Principles and Application", TMH, 1999.

Data Structures using C

COURSE OBJECTIVE:

1. Understand and remember algorithms and its analysis procedure. Introduce the concept of data structures through ADT including List, Stack, Queues.
2. To design and implement various data structure algorithms.
3. To introduce various techniques for representation of the data in the real world.
4. To develop application using data structure algorithms. Compute the complexity of various algorithms.

COURSE OUTCOME:

1. Have a comprehensive knowledge of the data structures and algorithms on which file structures and data bases are based.
2. Understand the importance of data and be able to identify the data requirements for an application.
3. Have an understanding and practical experience of algorithmic design and implementation.
4. Have practical experience of developing applications that utilize databases.
5. Understand the issues involved in algorithm complexity and performance.

UNIT-I

Arrays: Representation of single and multidimensional arrays; sparse arrays - lower and upper triangular matrices and Tri-diagonal matrices
Stacks and Queues: Introduction and primitive operations on stack; Stack application: Infix, postfix, prefix expressions; Evaluation of postfix expression; Conversion from infix to postfix. Introduction and primitive operation on queues, D-queues and priority queues.

UNIT-II
Lists: Introduction to linked lists; Sequential and linked lists, operations such as traversal, insertion, deletion, searching, Two way lists and Use of headers
Trees: Introduction and terminology; Traversal of binary trees; Recursive algorithms for tree operations such as traversal, insertion, deletion;

UNIT-III
Multilevel indexing and B-Trees: Introduction: The invention of the B-tree; Statement of the problem; Indexing with binary search trees; Multilevel indexing, a better approach to tree indexes; B-trees: working up from the bottom; Example for creating a B-tree.

UNIT-IV
Sorting Techniques: Insertion sort, selection sort, merge sort, heap sort, Quick sort, Radix Sort,
Searching Techniques: linear search, binary search and hashing

Text Books:
1. E. Horowitz and S. Sahani, "Fundamentals of Data Structures", Galgotia Booksource Pvt. Ltd, 2003
2. R. S. Salaria, "Data Structure & Algorithms", Khanna Book Publishing Co. (P) Ltd., 2002.

References Books:

1. P. S. Deshpande and O.G. Kakde, "C & Data Structure", Wiley Dreamtech, 1st Edition, 2003.
2. Y. Langsam et. al., "Data Structures using C and C++", PHI, 1999.
3. Schaum's outline series, "Data Structure", TMH, 2002

Database management System

COURSE OBJECTIVE:

This is a foundational course on Data Modeling. The course aims to impart knowledge of the concepts related to database and operations on databases. It also gives the idea how database is managed in various environments with emphasis on security measures as implemented in database management systems.

COURSE OUTCOME:

1. Understand the concepts of database and techniques for its management.
2. Different Data Models at Conceptual and Logical level.
3. Differentiate between the role of DBA and Data Architect
4. Understanding Data Security standards and Methods

UNIT – I

Introduction: Characteristics of database approach, data models, DBMS architecture and data independence, Significance of Database, Database System Applications, Advantages and Disadvantages of Database Management System, DBMS Vs RDBMS.

E-R Modeling: Entity types, entity set, attribute and key, relationships, relation types, roles and structural constraints, weak entities, enhanced E-R and object modeling, Sub Classes: Super classes, inheritance, specialization and generalization.

UNIT – II

File Organization: Indexed sequential access files, implementation using B++ trees, hashing, hashing functions, collision resolution, extendible hashing, dynamic hashing approach-implementation and performance.

UNIT – III

Relational Data Model: Relational model concepts, relational constraints, relational algebra.
SQL: SQL queries, programming using SQL
EER and ER to relational Mapping: Data base design using EER to relational language.

UNIT – IV

Data Normalization: Functional dependencies, Normal form up to 3rd normal form. Concurrency Control: Transaction processing, locking techniques and associated, database recovery, security and authorization.
Recovery Techniques, Database Security

Text Books:
   1. R. Elmarsi and SB Navathe, "Fundamentals of Database Systems", Addison Wesley, 4th Ed., 2004

Reference Books:

1. Abraham Silberschatz, Henry Korth, S. Sudarshan, "Database Systems Concepts", 4th Edition, McGraw Hill, 1997.
2. Jim Melton, Alan Simon, "Understanding the new SQL: A complete Guide", Morgan Kaufmann Publishers, 1993. A. K. Majumdar, P. Battacharya, "Data Base Management Systems', TMH, 1996.
3. Bipin Desai, "An Introduction to database Systems", Galgotia Publications, 1991.

Practical – II (LAB)

Practical will be based on following Papers:

1. Data Structure with C
2. Database Management System (SQL Queries)

SEMESTER-III

BCA 301

<div align="right">External Marks:70
Internal Marks: 30</div>

Web Designing

COURSE OBJECTIVE:

To build web applications using ASP and client side script technologies use with Microsoft's IIS. To build XML applications with DTD and style sheets that span multiple domains ranging from finance to vector graphics to genealogy for use with legacy browsers.

COURSE OUTCOME:

1. Understand the various steps in designing Creative and dynamic website
2. Write HTML, JavaScript, CSS and PHP.
3. Differentiate between the role of DBA and Data Architect
4. Understanding Data Security standards and Methods

UNIT – I

Introduction to Internet and World Wide Web; Evolution and History of World Wide Web; Basic features; Web Browsers; Web Servers; Hypertext Transfer Protocol, Overview of TCP/IP and its services; URLs; Searching and Web-Casting Techniques; Search Engines and Search Tools;

UNIT – II

Web Publishing: Hosting your Site; Internet Service Provider; Web terminologies, Phases of Planning and designing your Web Site; Steps for developing your Site; Choosing the contents; Home Page; Domain Names, Front page views, Adding pictures, Links, Backgrounds, Relating Front Page to DHTML. Creating a Website and the Markup Languages (HTML, DHTML);

UNIT – III

Web Development: Introduction to HTML; Hypertext and HTML; HTML Document Features; HTML command Tags; Creating Links; Headers; Text styles; Text Structuring; Text colors and Background; Formatting text; Page layouts;

UNIT – IV

Images; Ordered and Unordered lists; Inserting Graphics; Table Creation and Layouts; Frame Creation and Layouts; Working with Forms and Menus; Working with Radio Buttons; Check Boxes; Text Boxes;

DHTML: Dynamic HTML, Features of DHTML, CSSP(cascading style sheet positioning) and JSSS(JavaScript assisted style sheet), Layers of netscape, The ID attributes, DHTML events.

Reference Books

1. Raj Kamal, "Internet and Web Technologies", Tata McGraw-Hill.
2. Ramesh Bangia, "Multimedia and Web Technology", Firewall Media.
3. Thomas A. Powell, "Web Design: The Complete Reference" , 4/e, Tata McGraw-Hill
4. Wendy Willard, "HTML Beginners Guide", Tata McGraw-Hill.
5. Deitel and Goldberg, "Internet and World Wide Web, How to Program", PHI.
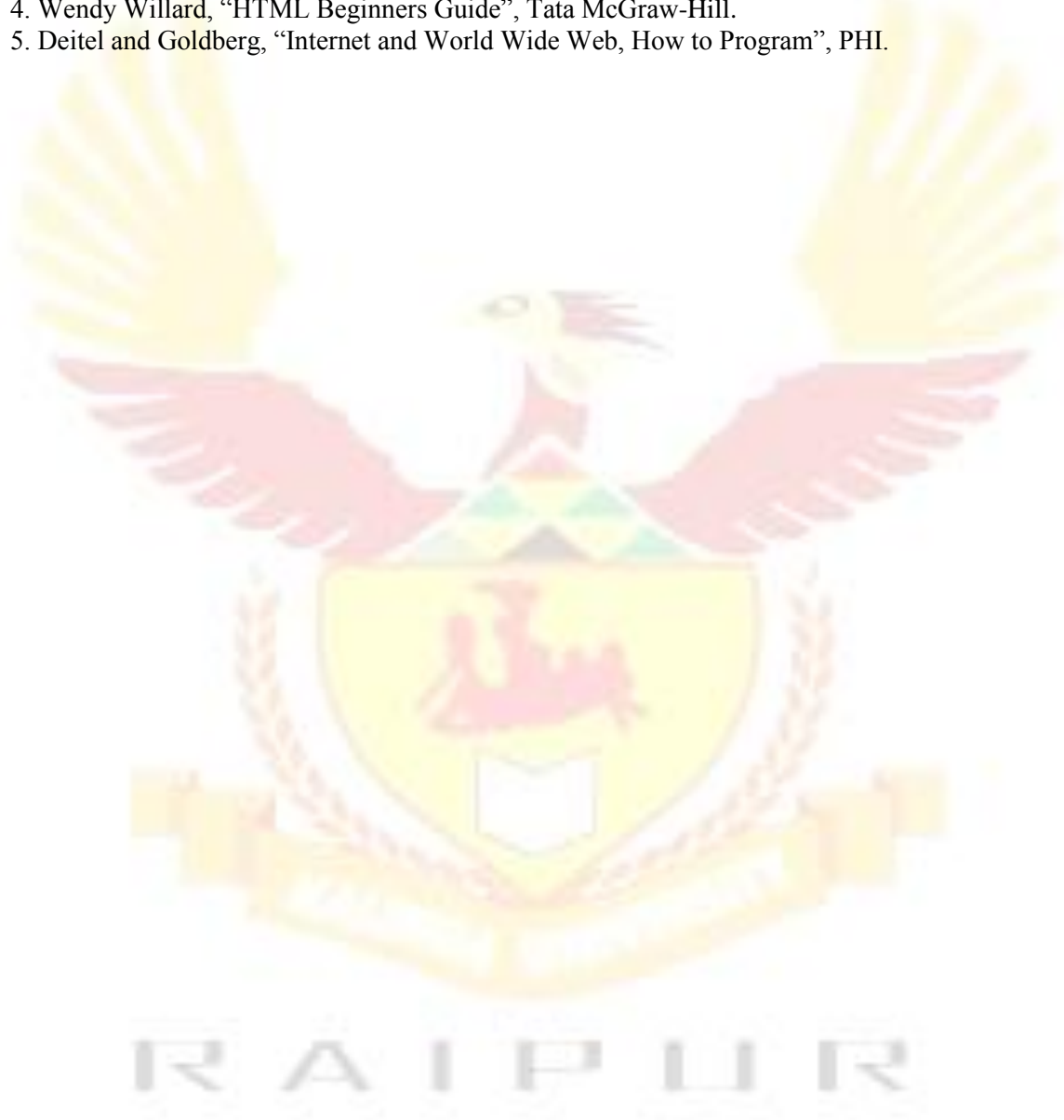
Computer Architecture

COURSE OBJECTIVE:

The course covers the basic principles of computer organization, operation and performance. It also deals with embedded systems, peripheral devices, memory management, and processor family evolution patterns. The course discusses the role of pipelining and multiple functional units in processor design.

COURSE OUTCOME:

1. Master the binary and hexadecimal number systems including computer arithmetic.
2. Getting familiar with the history and development of modern computers.
3. Understand the fundamentals of different instruction set architectures and their relationship   to the CPU design.
4. Understand the principles and the implementation of computer arithmetic.

UNIT-I

Register Transfer and Micro-operations: Register Transfer Language, Register Transfer, Bus and Memory Transfers, Arithmetic Micro-operations, Logic Micro-operations, Shift Micro-operations, Arithmetic logic shift unit.

Basic Computer Organizations and Design: Instruction Codes, Computer Registers, Computer Instructions, Timing and Control,

UNIT-II

Basic Computer Organizations Instructions, Register reference Accumulator Logic Shift Unitand Design: Instruction Cycle, Memory-Reference instructions, Input - Output Instructions, Design of **Central Processing Unit:** Introduction, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes,

UNIT-III

Computer Arithmetic: Introduction, Multiplication Algorithms, Division Algorithms, for fixed point-members.

Input-Output Organization: Peripheral Devices, Input-Output Interfaces, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, Direct Memory Access (DMA)

UNIT-IV

Memory Organization: Memory Hierarchy, Main Memory, Auxiliary Memory, Associative Memory, Cache Memory, Virtual Memory, Memory Management Hardware

Text Books :

1., Morris Mano, Computer System Architecture, 3rd Edition,, Prentice-Hall of, India
, Private Limited, 1999.

Reference Books:

1. WIliam Stallings, Computer Organization and Architecture, 4thh , Edition, Prentice, Hall
of India Private Limited, 2001
2. Harry & Jordan, Computer Systems Design & Architecture, Addison Wesley, Delhi, 2000.
3., Malvino, "Digital Computer Electronics: An Introduction to Microcomputers", McGraw
Hill, 1993.

BCA 303   External Marks:70

Internal Marks: 30

MULTIMEDIA

UNIT 1

Introductory Concepts: Multimedia – Definitions, CD-ROM and the Multimedia Highway, Uses of Multimedia, Introduction to making multimedia – The Stages of project, the requirements to make good multimedia, Multimedia skills and training, Training opportunities in Multimedia. Motivation for multimedia usage, Frequency domain analysis, Application Domain

UNIT 2

Multimedia-Hardware and Software: Multimedia Hardware – Macintosh and Windows production Platforms, Hardware peripherals – Connections, Memory and storage devices, Media software – Basic tools, making instant multimedia, Multimedia software and Authoring tools, Production Standards.

UNIT 3

Multimedia – making it work – multimedia building blocks – Text, Sound, Images, Animation and Video, Digitization of Audio and Video objects, Data Compression: Different algorithms concern to text, audio, video and images etc., Working Exposure on Tools like Dream Weaver, Flash, Photoshop Etc.,

UNIT 4

Multimedia and the Internet: History, Internet working, Connections, Internet Services, The World Wide Web, Tools for the WWW – Web Servers, Web Browsers, Web page makers and editors, Plug-Ins and Delivery Vehicles, HTML, VRML, Designing for the WWW – Working on the Web, Multimedia Applications – Media Communication, Media Consumption, Media Entertainment, Media games.

UNIT 5

Multimedia-looking towards Future: Digital Communication and New Media, Interactive Television, Digital Broadcasting, Digital Radio, Multimedia Conferencing, Assembling and delivering a project-planning and costing, Designing and Producing, content and talent, Delivering, CD-ROM technology.

Textbook:
1. S. Heath, Multimedia & Communication Systems, Focal Press, UK.
2. T. Vaughan, Multimedia: Making it work, 4th Edition, Tata McGraw Hill, New Delhi.
3. K. Andleigh and K. Thakkar, Multimedia System Design, PHI, New Delhi.
Reference Books:
1. Keyes, "Multimedia Handbook", TMH.
2. R. Steinmetz and K. Naharstedt, Multimedia: Computing, Communications & Applications, Pearson, Delhi.
3. S. Rimmer, Advanced Multimedia Programming, PHI, N

BCA 304   External Marks:70
                                                                        Internal Marks: 30

Financial Accounting

COURSE OBJECTIVE:

The objective of this course is to introduce problems of financial accounting such as measuring and reporting issues related to assets and liabilities and preparing the financial statements. Students are expected to gain the ability of using accounting information as a tool in applying solutions for managerial problems, evaluating the financial performance, and interpreting the financial structure.

COURSE OUTCOME:

1. Define bookkeeping and accounting.
2. Explain the general purposes and functions of accounting.
3. Explain the differences between management and financial accounting.
4. Describe the main elements of financial accounting information – assets, liabilities, revenue and expenses.
5. Identify the main financial statements and their purpose

UNIT – I

Meaning and Nature of Financial Accounting, Scope of Financial Accounting, Financial Accounting & Management Accounting, Accounting concepts & convention, Accounting standards in India.

UNIT – II

Basis of accounting-cash & accrual, Journalizing transaction, Introduction to Ledger posting and trial balance, Capital and revenue items. Application of computers in accounting, Accounting procedure used for recording cash, Bank and, journal, transactions, using, appreciate vouchers, Introduction to ledger accounting, Cash, Book,, Journal, and, bank, account, Introduction to trial balance, Profit and Loss account and balance sheet.

UNIT – III

Financial statement analysis: Ratio analysis, Funds flow analysis,, concepts, uses,, Preparation, of funds flow statement, simple problem, Cash flow analysis, Concepts, uses, preparation of cash flow statement, simple problem, Break-even analysis.

UNIT – IV

Inventory valuation: Objectives, Introduction to FIFO, LIFO & Weighted Average method of inventory valuation, Valuation of inventory on balance sheet date, inventory accounting and control, Introduction to stocks & shares, Concept of cost of capital, introduction, importance, explicit & implicit cost, Measurement of cost of capital, cost of debt.
Theory of working capital: Nature and concepts.

Text Books:
1. Maheshwari & Maheshwari, "An Introduction to Accountancy", 8th Edition, Vikas Publishing House, 2003

References Books:
1. Gupta R. L., Gupta V. K., "Principles & Practice of Accountancy", Sultan Chand & Sons, 1999. Khan & Jain, "Financial Accounting"

2 Maheshwari S. N., "Principals of Management Accounting", 11th Edition,, Sultan Chand & Sons, 2001.,

3., Shukla and Grewal, "Advanced Accounts", 14th Edition, Sultan Chand &, Sons.

Object Oriented Programming using C++

COURSE OBJECTIVE:

1. To learn advanced features of the C++ programming language as a continuation of the previous course.
2. To learn the characteristics of an object-oriented programming language: data abstraction and information hiding, inheritance, and dynamic binding of the messages to the methods.
3. To learn the basic principles of object-oriented design and software engineering in terms of software reuse and managing complexity.
4. To enhance problem solving and programming skills in C++ with extensive programming projects.

 COURSE OUTCOME:

 1. Apply C++ features to program design and implementation
 2. Explain object-oriented concepts and describe how they are supported by C++ including identifying the features and peculiarities of the C++ programming language.
 3. Use C++ to demonstrate practical experience in developing object-oriented solutions.
 4. Design and implement programs using C++
 5. Analyze a problem description, design and build object-oriented software using good coding practices and techniques.
 6. Implement an achievable practical application and analyze issues related to object-oriented techniques in the C++ programming language.

UNIT – I
Introduction: Introducing Object-Oriented Approach, Relating to other paradigms (functional, data decomposition). Basic terms and ideas: Abstraction, Encapsulation, Inheritance, Polymorphism, Review of C, Difference between C and C++ - cin, cout, new, delete operators.

UNIT – II
Classes and Objects: Encapsulation, information hiding, abstract data types, Object & classes, attributes, methods, C++ class declaration, State identity and behavior of an object, Constructors and destructors, instantiation of objects, Default parameter value, object types, C++ garbage collection, dynamic memory allocation, Metaclass /abstract classes.

UNIT – III
Inheritance and Polymorphism: Inheritance:Introduction and types of Inheritance, Class hierarchy, derivation – public, private &
protected,, Aggregation,, composition vs. classification hierarchies, Polymorphism, Categorization of polymorphism techniques, Method, polymorphism, Polymorphism by parameter, Operator overloading, Parametric polymorphism,,

UNIT – IV
Generic function – template function, function name overloading, Overriding inheritance methods,

Run time polymorphism, Multiple Inheritance.

Files and Exception Handling: Persistent objects, Streams and files, Namespaces, Exception handling, Generic Classes

Text Books:
1.	A.R.Venugopal, Rajkumar, T. Ravishanker "Mastering C++", TMH, 1997.
2.	S. B. Lippman & J. Lajoie, "C++ Primer", 3rd Edition, Addison Wesley, 2000.

Reference Books:
1.	R. Lafore, "Object Oriented Programming using C++", Galgotia Publications, 2004.
2.	D . Parasons, "Object Oriented Programming with C++", BPB Publication.
3.	Steven C. Lawlor, "The Art of Programming Computer Science with C++", Vikas Publication.
4.	Schildt Herbert, "C++: The Complete Reference", 4th Ed., Tata McGraw Hill, 1999.
5.	Tony Gaddis, Watters, Muganda, "Object-Oriented Programming in C++", 3rd Ed., Wiley Dreamtech, 2004.
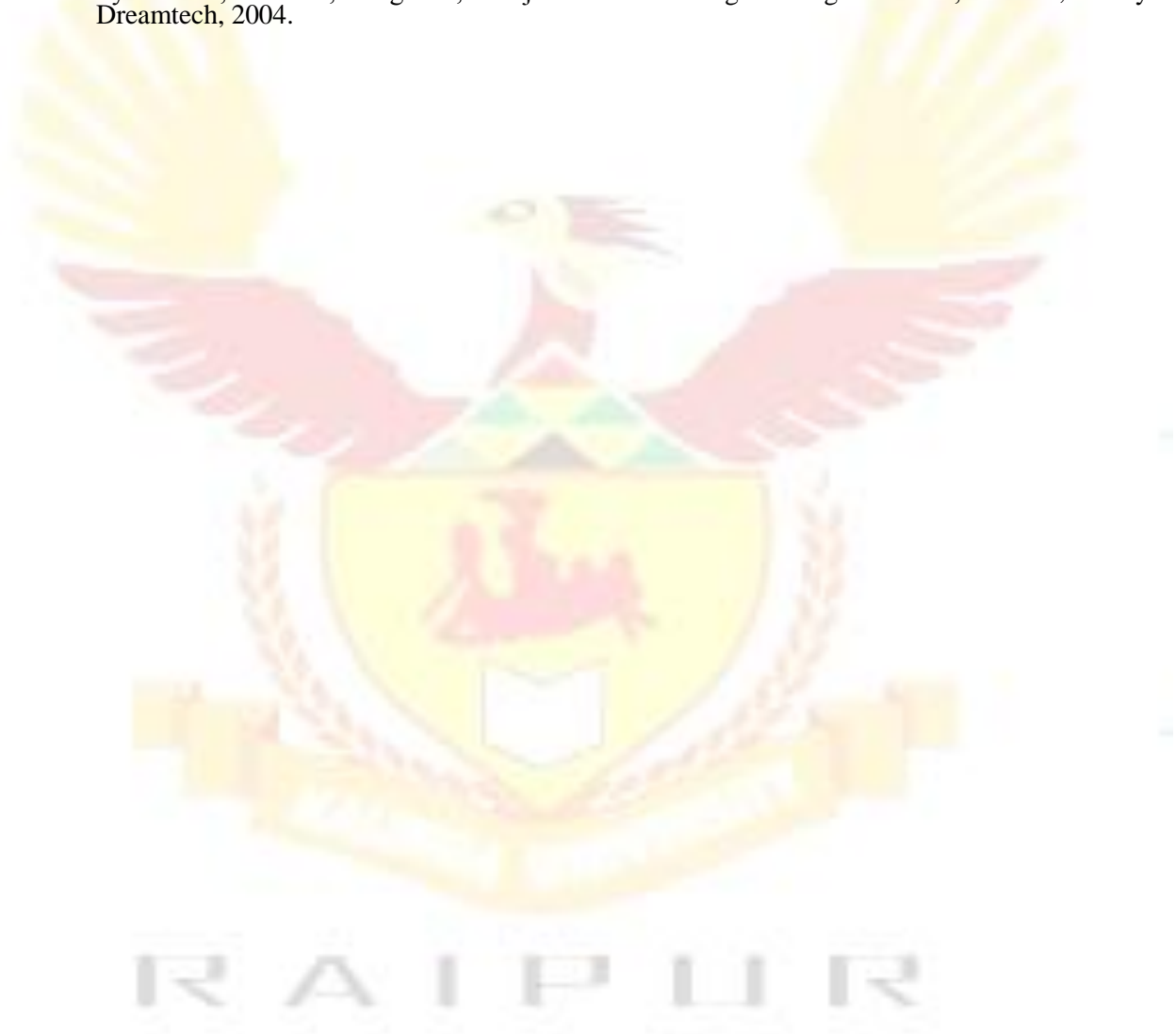
BCA 306-P   External Marks:30
                                                                      Internal Marks: 20

Practical – III

Practical will be based on following Papers:

1.   Object Oriented Programming using C++

SEMESTER-IV

Management Information System

COURSE OBJECTIVE:

Provide students with comprehensive knowledge and technical skills needed to successfully participate in and support the increasingly applied role of information technology in corporate decision making. Enable graduates to conceptualize and manage the specification, design and implementation of applied information systems. Provide the knowledge of contemporary issues related to the field of managing information systems. Develop knowledge and skills required to work effectively in a profession. Enhance self-confidence, ability to make proper decisions and effective communication, and Pursue lifelong learning and continuing education.

COURSE OUTCOME:

1. The student should be able to analyze, evaluate, and make recommendations regarding business technology and decisions.
 2. Understand the leadership role of Management Information Systems in achieving business competitive advantage through informed decision making.
3. Analyze and synthesize business information and systems to facilitate evaluation of strategic alternatives.
4. Effectively communicate strategic alternatives to facilitate decision making.
5. Team Work: Students will work collaboratively**,** demonstrating courtesy, using appropriate etiquette, in preparing and presenting presentations.

UNIT I
The meaning and role of MIS: What is MIS?. Decision support systems, systems approach, the systems view of business, MIS Organization within the company.

Management Organizational theory and the systems approach:
Development of organization theory, management and organizational behavior, management, information, and the systems approach.

UNIT – II
Information Systems for decision making: Evolution of an information system, Basic Information Systems, decision making and MIS, MIS as a technique for making programmed decisions, decision assisting information systems, Simon's Model of Decision Making, Structured Vs Un-structured Decisions.

Strategic and project planning for MIS: General, business planning, appropriate MIS response, MIS planning – general, MIS planning – details.

UNIT – III
Conceptual system design: Define the problems, set system objectives, establish system constraints, determine information needs, determine information sources, develop alternative.
conceptual designs and select one, document the system concept,, prepare the conceptual design report.

UNIT – IV

Implementation, evaluation and maintenance of the MIS: Plan the, implementation, acquire
floor space and plan space layouts, organize for implementation, develop procedures for implementation, train and operating personnel, computer related acquisitions, develop forms for data collection and information, dissemination, develop the files, test the system, cut over, document the system, evaluate the MIS, control and maintain the system.

Pitfalls in MIS, development: Fundamental weaknesses, soft spots, in planning, design
problems, implementation: The TAR PIT, A Study of Marketing, Personnel, Financial and Production MIS.

Text book:

1. R. G. Murdick, J. E. Ross and J. R. Clagget, "Information Systems for Modern Management", 3rd Edition by,PHI – 1994.
2. Parker, Charles Case, Thomas, "Management Information System: Strategy & Action", 2nd Edition, TMH, 1993.

BCA 402   External Marks:70
                                                             Internal Marks: 30
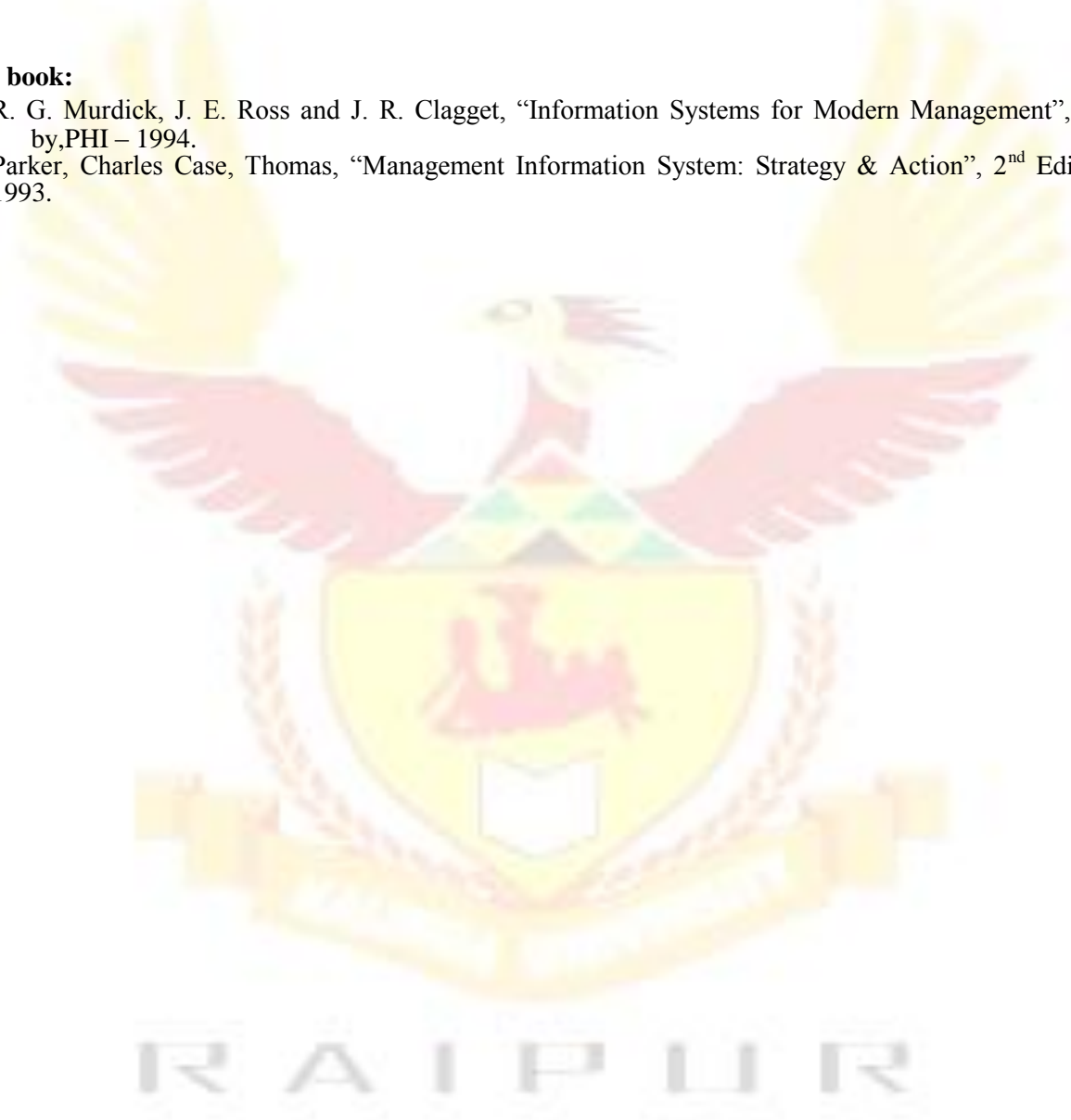
Structured Systems Analysis and Design

COURSE OBJECTIVE:

This module aims to as to introduce variety of new software used by analysts, designers to manage projects, analyze and document systems, design new systems and implement their plans. It introduces also a recent coverage of UML, wireless technologies and ERP; web based systems for e-commerce and expanded coverage on RAD and GUI design.

COURSE OUTCOME:

1. Understand the principles and tools of systems analysis and design.
2. Understand the application of computing in different context.
3. Understand the professional and ethical responsibilities of practicing the computer professional including understanding the need for quality.
4. Solve a wide range of problems related to the analysis, design and construction of information systems.
5. Analysis and Design of systems of small sizes

UNIT-I

Introduction to system, Definition and characteristics of a system, Elements of system, Types of system, System development life cycle, Role of system analyst, Analyst/user interface, System planning and initial investigation: Introduction, Bases for planning in system analysis, Sources of project requests, Initial investigation, Fact finding, Information gathering, information gathering tools, Fact analysis, Determination of feasibility.

UNIT-II

Structured analysis, Tools of structured analysis: DFD, Data dictionary, Flow charts, Gantt charts, decision tree, decision table, structured English, Pros and cons of each tool, Feasibility study: Introduction, Objective, Types, Steps in feasibility analysis, Feasibility report, Oral presentation, Cost and benefit analysis: Identification of costs and benefits, classification of costs and benefits, Methods of determining costs and benefits, Interpret results of analysis and take final action.

UNIT-III

System Design: System design objective, Logical and physical design, Design Methodologies, structured design, Form-Driven methodology(IPO charts), structured walkthrough, Input/Output and form design: Input design, Objectives of input design, Output design, Objectives of output design, Form design, Classification of forms, requirements of form design, Types of forms, Layout considerations, Form control.

UNIT-IV
System testing: Introduction, Objectives of testing, Need for system Testing, various approaches to system Testing, Test plan, testing techniques/Types of system tests, Quality assurance goals in system life cycle, System implementation, Process of implementation, System evaluation, System maintenance and its types, System documentation, Forms of documentation.

Reference Books
1. Systems Analysis and design BY e.m. aWAD Galgotia Pub.(P) Ltd.
2. Data Management and Data Structures by Loomis (PHI)
3. System Analysis and Design by Elias Awad.
4. Introductory System analysis and Design by Lee Vol. I & II

BCA 403   External Marks:70
                                                               Internal Marks: 30

Object Technologies & Programming using Java

COURSE OBJECTIVE:

1. To introduce students to the Java programming language.
2. To create Java programs that leverage the object-oriented features of the Java language, such as encapsulation, inheritance and polymorphism; use data types, arrays and other data collections.
3. To implement I/O functionality to read from and write to text files.

COURSE OUTCOME:

1. Understanding of the principles and practice of object oriented analysis and design in the construction of robust, maintainable programs which satisfy their requirements.

2. Ability to implement, compile, test and run Java programs comprising more than one class, to address a particular software problem..

   3. Demonstrate the principles of object oriented programming.

4. Demonstrate the ability to use simple data structures like arrays in a Java program.

5. Understand the concept of package, interface, multithreading and File handling in java.

6. Ability to make use of members of classes found in the Java API.

UNIT-I

Object Oriented Methodology-1: Paradigms of Programming Languages, Evolution of OO Methodology, Basic Concepts of OO Approach, Comparison of Object Oriented and Procedure Oriented Approaches, Benefits of OOPs, Introduction to Common OO Language, Applications of OOPs .

Object Oriented Methodology-2: Classes and Objects, Abstraction and Encapsulation, Inheritance, Method Overriding and Polymorphism.

UNIT-II

Java Language Basics*:* Introduction To Java, Basic Features, Java Virtual Machine Concepts, Primitive Data Type And Variables, Java Operators, Expressions, Statements and Arrays.

Object Oriented Concepts: Class and Objects-- Class Fundamentals, Creating objects , Assigning object reference variables; Introducing Methods, Static methods, Constructors , Overloading constructors; This Keyword; Using Objects as Parameters, Argument passing, Returning objects , Method overloading, Garbage Collection, The Finalize ( ) Method.

Inheritance and Polymorphism: Inheritance Basics, Access Control, Multilevel Inheritance, Method Overriding, Abstract Classes, Polymorphism, Final Keyword.

UNIT-III

Packages : Defining Package, CLASSPATH, Package naming, Accessibility of Packages using Package Members.
Interfaces: Implementing Interfaces, Interface and Abstract Classes, Extends and Implements together .

Exceptions Handling : Exception , Handling of Exception, Using try-catch , Catching Multiple Exceptions Using finally clause , Types of Exceptions, Throwing Exceptions, Writing Exception Subclasses.

UNIT-IV

Multithreading : Introduction , The Main Thread, Java Thread Model, Thread Priorities, Synchronization in Java, Inter thread Communication.

I/O in Java : I/O Basics, Streams and Stream Classes ,The Predefined Streams, Reading from, and Writing to, Console, Reading and Writing Files , The Transient and Volatile Modifiers , Using Instance of Native Methods.
Strings and Characters : Fundamentals of Characters and Strings, The String Class , String Operations , Data Conversion using Value Of ( ) Methods , String Buffer,Class and Methods.

Reference Books
1. Programming in Java, E Balagurusamy .
2. The Complete Reference JAVA, TMH Publication.
3. Begining JAVA, Ivor Horton, WROX Public.
4. JAVA 2 UNLEASHED, Tech Media Publications.
5. Patrick Naughton and Herbertz Schildt, "Java-2 The Complete
Reference", 1999,TMH.

Operating System

COURSE OBJECTIVE:

1. To understand the main components of an OS & their functions.
2. To study the process management and scheduling.
3. To understand various issues in Inter Process Communication (IPC) and the role of OS in IPC. T
4. To understand the concepts and implementation Memory management policies and virtual memory.
5. To understand the working of an OS as a resource manager, file system manager, process manager, memory manager and I/O manager and methods used to implement the different parts of OS.
6. To study the need for special purpose operating system with the advent of new emerging technologies.

COURSE OUTCOME:

1. Gain extensive knowledge on principles and modules of operating systems

2. Understand key mechanisms in design of operating systems modules.

3. Understand process management, concurrent processes and threads, memory management, virtual memory concepts, deadlocks.

4. Compare performance of processor scheduling algorithms - produce algorithmic solutions to process synchronization problems.

5. Use modern operating system calls such as Linux process and practice with operating system concepts such as process management, synchronization, networked processes and file systems**.**

UNIT – I

Introduction, What is an Operating System, Simple Batch Systems, Multi programmed Batches systems, Time-Sharing Systems, Personal-computer systems, Parallel systems, Distributed Systems, Real-Time Systems.
Memory Management: Background, Logical versus Physical Address space, swapping, Contiguous allocation, Paging, Segmentation.
Virtual Memory: Demand Paging, Page Replacement, Page-replacement Algorithms, Performance of Demand Paging, Allocation of Frames, Thrashing, Other Considerations

UNIT – II
Processes: Process Concept, Process Scheduling, Operation on Processes
CPU Scheduling: Basic Concepts, Scheduling Criteria, Scheduling Algorithms, Multiple - Processor Scheduling.
Process Synchronization: Background, The Critical-Section Problem, Synchronization Hardware, Semaphores, Classical Problems of Synchronization.

UNIT – III

Deadlocks: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock

Device Management: Techniques for Device Management, Dedicated Devices, Shared Devices, Virtual Devices; Input or Output Devices, Storage Devices, Buffering, Secondary-Storage Structure: Disk Structure, Disk Scheduling, Disk Management, Swap-Space Management, Disk Reliability.

UNIT – IV

Information Management: Introduction, A Simple File System, General Model of a File System, Symbolic File System, Basic File System, Access Control Verification, Logical File System, Physical File System File-System Interface: File, Concept, Access Methods, Directory Structure, Protection, Consistency Semantics File -System Implementation: File - System Structure, Allocation Methods.

Text Books:
1. Silbersachatz and Galvin, "Operating System Concepts", Pearson, 5th Ed., 2001
2. Madnick E., Donovan J., "Operating Systems", Tata McGraw Hill, 2001

Reference Books:
1.Tannenbaum, "Operating Systems", PHI, 4th Edition, 2000

Business Economics

COURSE OBJECTIVE:

1. To integrate the basic concepts of economics with the tools of mathematics and statistics in order to analyze and make optimal business decisions.
2. To expose Students of Commerce to basic micro economic concepts and inculcate an analytical approach to the subject matter.
3. To stimulate the student interest by showing the relevance and use of various economic theories.
4. To apply economic reasoning to problems of business.

COURSE OUTCOME:

1. Understand the roles of managers in firms.
2. Understand the internal and external decisions to be made by managers.
3. Analyze the demand and supply conditions and assess the position of a company.
4. Design competition strategies, including costing, pricing, product differentiation, and market environment according to the natures of products and the structures of the markets.
5. Analyze real-world business problems with a systematic theoretical framework.
6. Make optimal business decisions by integrating the concepts of economics, mathematics and statistics.

UNIT- I

The Scope and Method of Economics, The Economic Problem: Scarcity & Choice, The Price Mechanism, Demand & Supply Equilibrium: The concept of Elasticity and its Applications. The Production Process: Output decisions – Revenues, Costs and Profit Maximization Laws of Returns & Returns to Scale; Economies and Diseconomies of Scale.

UNIT- II

Market Structure: Equilibrium of a Firm and Price, Output Determination Under Perfect Competition, Monopoly, Monopolistic Competition & Oligopoly.

UNIT- III

Macro Economic Concerns: Inflation, Unemployment, Trade-Cycles: Circular Flow upto Four Sector Economy, Government in the Macro Economy: Fiscal Policy, Monetary Policy, Measuring National Income and Output.

UNIT-IV

The World Economy – WTO, Globalization, MNCs, Outsourcing, Foreign Capital in India, Trips, Groups of Twenty (G-20), Issues of Dumping, Export- Import Policy 2004-2009.

Text Books*:*

1. Ahuja H.L., "Business Economics", S. Chand & Co., New Delhi, 2001
2. Ferfuson P.R., Rothschild, R and Ferguson G.J. "Business Economics", Mac- Millan, Hampshire, 1993.
3. Karl E. Case & Ray C. Fair, "Principles of Economics", Pearson Education, Asia, 2000
4. Nellis, Joseph, Parker David, "The Essence of Business Economics", Prentice Hall, New Delhi, 1992.

Practical – IV

Practical will be based on following Paper:

    1.   Java Programming & Website Design

SEMESTER-V

Computer Networks

COURSE OBJECTIVE:

1. To be familiar with the basics of data communication. To be familiar with various types of computer networks.
2. To have experience in designing communication protocols. To be exposed to the TCP/IP protocol suite

COURSE OUTCOME:

1. Define, use and implement Computer Networks and the basic components of a Network system.
2. Know and Apply pieces of hardware and software to make networks more efficient, faster, more secure, easier to use, able to transmit several simultaneous messages, and able to interconnect with other networks
  3. Differentiate the various types of network configurations and applying them to meet the changing and challenging networking needs of organizations.
  4. Understand the layers of OSI and TCP and get knowledge about congestion control and network security
5. Define the different protocols, software, and network architectures.
6. Define the concept of local area networks, their topologies, protocols and applications.
7. Analyze why networks need security and control, what errors might occur, and how to control network errors.

UNIT – 1

Basic Concepts: Components of data communication, distributed processing, standards and organizations. Line configuration, topology, transmission mode, and categories of networks.
OSI and TCP/IP Models: Layers and their functions, comparison of models.
Digital Transmission: Interfaces and Modems: DTE-DCE Interface, modems, cable modems. Transmission Media: Guided and unguided, Attenuation, distortion, noise, throughput, propagation speed and time, wavelength, Shannon Capacity, comparison of media.

UNIT – II

Telephony: Multiplexing, error detection and correction: Many to one, one to many, WDM, TDM, FDM, circuit switching, packet switching and message switching.
Data Link control protocols: Line discipline, flow control, error control, synchronous and asynchronous protocols, character and bit oriented protocols, Link access procedures, IP Addressing.
Point to point protocols: Transmission states, PPP layers, LCP, Authentication, NCP. ISDN: Services, historical outline, subscriber's access, ISDN, Layers, and broadband ISDN.

UNIT – III

Devices: Repeaters, bridges, gateways, routers, The Network Layer, Design Issues, Routing Algorithms, Congestion Control Algorithms, Quality of Service, Internetworking, Network- Layer in the Internet,Firewall.

UNIT – IV

Transport and upper layers in OSI Model: Transport layer functions, connection management, Functions of session layers, Presentation layer, and Application layer. Electronic Mail (SMTP, POP3, IMAP, MIME) – HTTP – Web Services – DNS – SNMP

Text Books:
1. A. S. Tanenbaum, "Computer Networks"; Pearson Education Asia, 4th Ed., 2003.
2. Behrouz A. Forouzan, "Data Communication and Networking", 3rd edition, Tata Mc Graw Hill, 2004.

Reference Books:
1. D. E. Comer, "Internetworking with TCP/IP", Pearson Education Asia, 2001
2. William Stallings, "Data and computer communications", Pearson education Asia, 7th Ed., 2002.

External Marks:70
                                          Internal Marks: 30

.Net Programming

COURSE OBJECTIVE:

Set up a programming environment for ASP.net programs. - Configure an asp.net application. - Creating ASP.Net applications using standard .net controls. - Develop a data driven web application. - Connecting to data sources and managing them. - Maintain session and controls related information for user used in multi-user web applications - Understand the fundamentals of developing modular application by using object oriented methodologies - Use AJAX to create partial-page updates that refresh only the parts of the Web page that have changed.

COURSE OUTCOME:

1. will able to design web applications using ASP.NET.
2. able to use ASP.NET controls in web applications.
3. able to debug and deploy ASP.NET web applications.
4. be able to create database driven ASP.NET web applications and web services

UNIT – I

.Net architecture, Namespheres, Assemblies, object oriented features, memory management, interoperation with IOM, transaction in .NET, Structured exception handling, code access security.

UNIT – II

VB.NET
Similarities & differences with Visual Basic, windows focus, Working with menus, ADO.NET, working with databases, object oriented features.

UNIT – III

ASP.NET
Similarities & difference with ASP, Architecture, web-form, development, XML, databases interface.

UNIT – IV

C++ .NET Similarities & differences with C/C++, Creating components, window four, menus, validation, database interface.

Text Books:

1. A. Chakraborti et. al., "Microsoft .NET framework", PHI, 2002
2. M. Reynolds et. al., ".NET Enterprise", Wrox/SPD, 2002

Reference Books:

1. Richard Blaur & Mathew Reynolds, "Beginning VB.net 2003", 3rd Edition, Wiley Dream Tech., 2003
2. Chris Willman, John Kauffman, "Beginning ASP.net 1.1 with VB.NET 2003", Wiley Dream Teach, 2003
3. Chris Ullman, John Kauffman, "Beginning ASP.NET with Visual #.net 2003", Wiley Dream Tech, 2003

External Marks:70
                                                    Internal Marks: 30

Linux Environment

COURSE OBJECTIVE:

1. To understand and make effective use of linux utilities and shell scripting language to solve problems.
2. To implement in C some standard linux utilities like mv,cp,ls etc.
3. To Develop the skills the necessary for systems programming including file system
4. To develop the basic skills required to write network programs using sockets

COURSE OUTCOME:

1. Students will be able to understand the basic commands of linux operating system and can write shell scripts.
2. Students will be able to create file systems and directories and operate them.
3. Students will be create shared memory segements,pipes ,message queues and can exercise interprocess communication.
4. Students will be able to create processes background and fore ground etc..by fork() system calls.

UNIT-I

UNIX & LINUX:- Overview of UNIX and LINUX Architectures editors and commands, shell scripts, system administration, Basic Command of Linux.
LINUX Internals:
Introduction: - Data structures in LINUX kernel, process management, systems calls
Memory Management:- Architecture independent memory model, virtual address space for a process, block devices, caching, paging under LINUX.

UNIT-II

Inter Process Communication:- Synchronization in kernel, communication via files, pipes, ptrace, system V IPC, and sockets.

UNIT-III

LINUX File System: - Representation of file system in the kernel, Proc and Ext2 file system.
Modules: - Modules in LINUX, debugging.

UNIT-IV

Multiprocessing: Multiprocessing, Symmetric Multiprocessing, Changes with respect to kernel initialization, spooling, message exchange between processes, interrupt handling

Text Books:
1. A. Silberschatz, P. B. Galvin, "Operating System Concepts", John Wiley & Sons (Asia) Pte. Ltd, 2000
2. Neil Mathew, Richard Stones, "Beginning Linux Programming", 3rd Edition, Wiley Dream Tech, 2005

Reference Books:
1. B. W. Kernighan & R. Pike, "The UNIX Programming Environment", Prentice Hall of India, 2000
2. Cox K., "Red Hat Linux Administrator's Guide", PHI, 2001
3. M. Beck, "LINUX Kernel Internals", Addison Wesley, 1997

BCA 504   External Marks:70
                                                              Internal Marks: 30
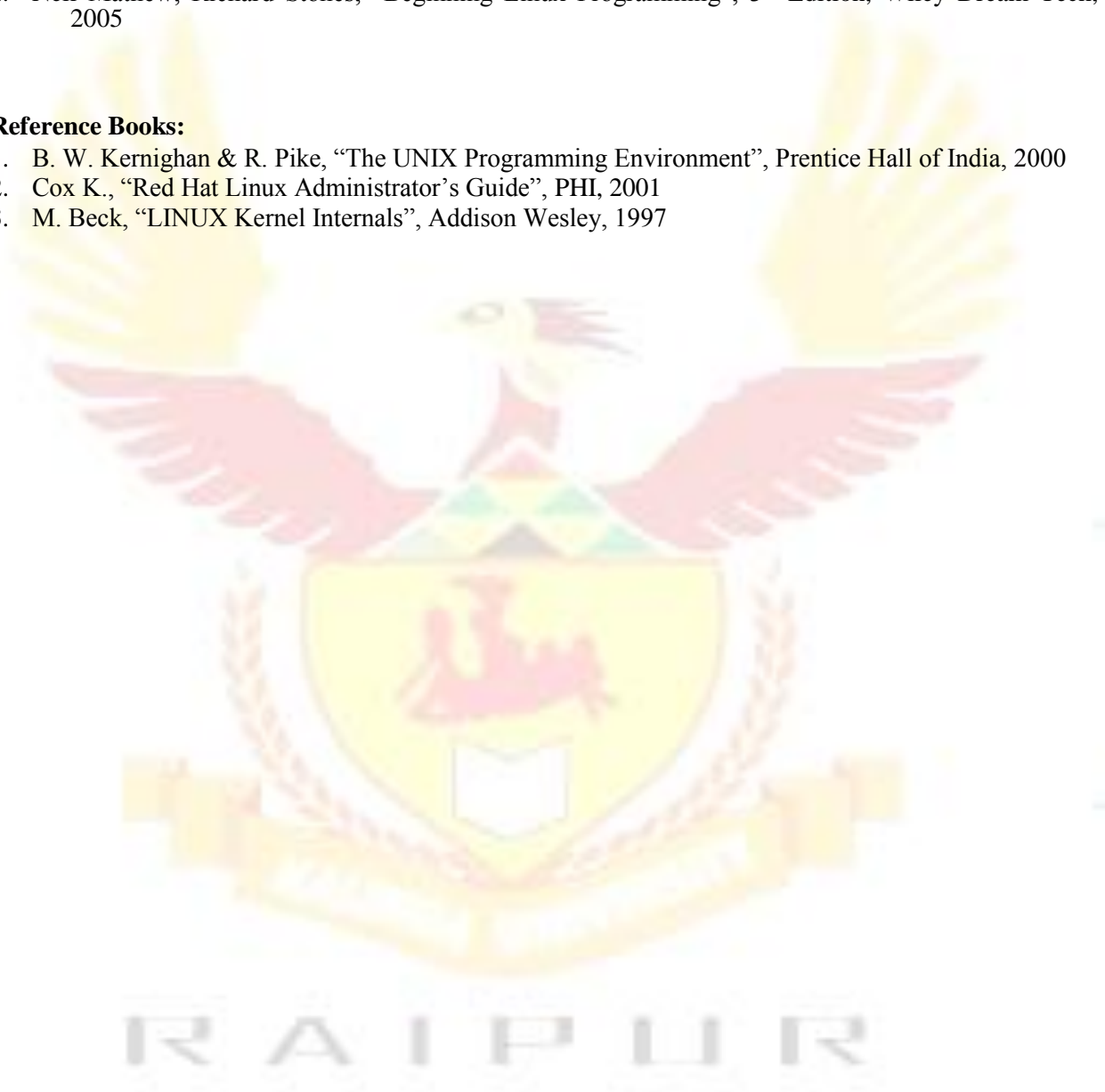
Software Engineering

COURSE OBJECTIVE:

1. Knowledge of basic SW engineering methods and practices, and their appropriate application.
2. Describe software engineering layered technology and Process frame work.
3. Understanding of software requirements and the SRS documents.
4. Describe data models, object models, context models and behavioural models.
5. Understanding of approaches to verification and validation including static analysis, and reviews.

COURSE OUTCOME:

1. Know about the software product and process.
2. Know about software characteristics, components and applications, methods and tools..
3. Understand the software development paradigms.
4. Know about the software process and lifecycle models.
5. Define the basic concepts and importance of Software project management concepts like cost estimation, scheduling and reviewing the progress.
6. Identify and implement of the software metrics.
7. Apply different testing and debugging techniques and analyzing their effectiveness.

UNIT – I

Introduction: Basic Framework for software engineering**,** Software Crisis, Software Processes & Characteristics, Software life cycle models, Waterfall, Prototype, Evolutionary and Spiral Models.
Software Requirements Analysis & Specifications: Requirement engineering, requirement elicitation techniques like FAST, QFD, requirements analysis using DFD, Data dictionaries & ER Diagrams, Requirements documentation, Nature of SRS, Characteristics & organization of SRS.

UNIT – II

Software Project Management Concepts: The Management spectrum, The People The Problem, The Process, The Project.
Software Project Planning: ProblemAnalysis**,** Size Estimation like lines of Code & Function Count, Cost Estimation Models, COCOMO, Risk Management.

UNIT - III

Software Design: Cohesion & Coupling, Classification of Cohesiveness & Coupling, Function Oriented Design, Object Oriented Design, Software Metrics: Software measurements: What & Why, Token Count, Halstead Software Science Measures, Design Metrics, Data Structure Metrics.

Software Implementation: Relationship between design and implementation, Implementation issues and programming support environment, coding the procedural design,

Good coding style.

UNIT - IV

Software Testing: Testing Process, Design of Test Cases, Types of Testing, Functional Testing, Structural Testing, Test Activities, Unit Testing, Integration Testing and System Testing, Debugging Activities.
Software Maintenance: Management of Maintenance, Maintenance Process, Reverse Engineering, Software Re-engineering, Configuration Management, Documentation.
Configuration Management: Need, Configuration management functions and activities; Configuration management techniques.

Reference Books
1. Gill, Nasib Singh : Software Engineering, Khanna Book Publishing Co. (P) Ltd. N.Delhi.
2. Pressman : Software Engineering, TMH.
3. Jalote, Pankaj : An Integrated Approach to Software Engineering, Narosa Publications.
4. Chhillar Rajender Singh : Software Engineering : Testing, Faults, Metrics, Excel Books, New Delhi.
5. Ghezzi, Carlo : Fundaments of Software Engineering, PHI.
6. Fairely, R.E. : Software Engineering Concepts, McGraw-Hill.
7. Lewis, T.G.: Software Egineering, McGraw-Hill.
8. Shere : Software Engineering & Management, Prentice Hall

Practical –V

Practical will be based on following Papers:

1. .Net Programming, , ,
2. Linux Environment

BCA 506   External Marks:70
                                                              Internal Marks: 30

Summer Project / Training

The viva will be conducted based on summer training of four weeks after the end of fourth semester.

SEMESTER-VI

BCA 601   External Marks:70
                                                        Internal Marks: 30

Artificial Intelligence

COURSE OBJECTIVE:

1. To create appreciation and understanding of both the achievements of AI and the theory underlying those achievements.
2. To introduce the concepts of a Rational Intelligent Agent and the different types of Agents that can be designed to solve problems.
3. To review the different stages of development of the AI field from human like behavior to Rational Agents.
4. To impart basic proficiency in representing difficult real life problems in a state space representation so as to solve them using AI techniques like searching and game playing.

   COURSE OUTCOME:

   1. Demonstrate knowledge of the building blocks of AI as presented in terms of intelligent agents.
   2. Analyze and formalize the problem as a state space, graph, design heuristics and select amongst different search or game based techniques to solve them.
   3. Develop intelligent algorithms for constraint satisfaction problems and also design intelligent systems for Game Playing
   4. Attain the capability to represent various real life problem domains using logic based techniques and use this to perform inference or planning.
   5. Formulate and solve problems with uncertain information using Bayesian approaches.
   6. Apply concept Natural Language processing to problems leading to understanding of cognitive computing.

UNIT – I

Overview of A.I: Introduction to AI, Importance of AI, AI and its related field, History of AI, Proposing and evaluating AI applications, AI techniques, Criteria for success.

Problems, problem space and search: Defining the problem as a state space search, Production system and its characteristics, Issues in the design of the search problem

Heuristic search techniques : Generate and test, hill climbing, best first search technique, problem reduction, constraint satisfaction

UNIT - II

Knowledge Representation: Definition and importance of knowledge, Knowledge representation, Various approaches used in knowledge representation, Issues in knowledge representation.

Using Predicate Logic : Represent ting Simple Facts in logic, Representing instances and is_a relationship, Computable function and predicate.

UNIT - III
Natural language Processing : Introduction syntactic processing, Semantic processing,Discourse and pragmatic processing.
Learning: Introduction learning, Rote learning, Learning by taking advice, Learning in problem solving, Learning from example-induction, Explanation based learning.

UNIT - IV

Expert System: Introduction, Representing using domain specific knowledge, Expert system shells.

Reference Books
1. David W. Rolston : Principles of Artificial Intelligence and Expert System Development, McGraw Hill Book Company.
2. Elaine Rich, Kevin Knight : Artificial Intelligence, Tata McGraw Hill.
3. D.W. Patterson, "Introduction to AI and Expert Systems", PHI, 1999 .
4. Nils J Nilsson ,"Artificial Intelligence -A new Synthesis" 2nd Edition (2000), Harcourt Asia Ltd.

BCA 602   External Marks:70
                                                               Internal Marks: 30
Mobile Computing

COURSE OBJECTIVE:

1. To understand the basic cellular system concepts.
2. To have an insight into the various propagation models and the speech coders used in mobile communication.
3. **To** understand the multiple access techniques and interference eduction techniques in mobile communication.

COURSE OUTCOME:

1. Discuss cellular radio concepts
2. Identify various propagation effects.
3. To have knowledge of the mobile system specifications
4. Classify multiple access techniques in mobile communication.
5. Outline cellular mobile communication standards.
6. Analyze various methodologies to improve the cellular capacity

UNIT- 1:

Introducing the Mobile Internet: Understanding the basic concepts of mobile computing,The Mobile Internet is here, The Rise of Mobile data. Key Services for the mobile Internet, Business opportunities.

UNIT- 2:

WAP: the Mobile Internet Standard: Making the Internet Mobile: Challenges and Pitfalls, Overview of the Wireless Application Protocol.

UNIT- 3:

Implementing WAP Services: The Wireless Markup Language, Enhanced WML: WML Script and WTAI, User Interface Design: Marking Wireless Applications Easy to Use.

UNIT- 4:

Advanced WAP: Tailoring Content to the Client, Push Messaging, Wireless Telephony Applications, Building and Deploying End-to-End WAP Services. Where Next: The Mobile Internet Future.

,

Text Book:,

1., Sandeep Singhal, "The Wireless Application, Protocol, Writing Applications for , Mobile Internet", Pearson Education, 2000,

BCA 603   External Marks:70
                                                                                 Internal Marks: 30

Computer Graphics & Multimedia Applications

COURSE OBJECTIVE:

1. To introduce the use of the components of a graphics system and become familiar with building approach of graphics system components and algorithms related with them.
2. To learn the basic principles of 3- dimensional computer graphics.
3. Provide an understanding of how to scan convert the basic geometrical primitives, how to transform the shapes to fit them as per the picture definition.
4. Provide an understanding of mapping from a world coordinates to device coordinates, clipping, and projections.
5. To be able to discuss the application of computer graphics concepts in the development of computer games, information visualization, and business applications.
6. To comprehend and analyze the fundamentals of animation, virtual reality, underlying technologies, principles, and applications.

COURSE OUTCOME:

1. Demonstrate an understanding of contemporary graphics hardware.
2. Create interactive graphics applications in C++ using one or more graphics application programming interfaces.
3. Write program functions to implement graphics primitives
4. Write programs that demonstrate geometrical transformations.
5. Demonstrate an understanding of the use of object hierarchy in graphics applications.
6. Write program functions to implement visibility detection.

UNIT – I

Introduction: The Advantages of Interactive Graphics, Representative Uses of Computer Graphics, Classification of Applications, Development of Hardware, and Software, for Computer Graphics, Conceptual Framework for Interactive Graphics,Overview ,, Scan Converting Lines, Scan Converting Circles, Scan Converting Ellipses.
Graphics Hardware
Hardcopy Technologies, Display Technologies, Raster-Scan Display Systems, The Video Controller, Random-Scan Display Processor, Input Devices for Operator Interaction, Image Scanners, Working exposure on graphics tools like Dream Weaver, 3D Effects etc.
Clipping
Southland-Cohen Algorithm, Cyrus -Beck Algorithm, Midpoint Subdivision Algorithm

UNIT – II

Geometrical Transformations

2D Transformations, Homogeneous Coordinates and Matrix Representation of 2D Transformations, Composition of 2D Transformations, The Window-to-Viewport Transformation, Efficiency, Introduction to 3d transformations matrix, Matrix Representation of 3D Transformations, Transformations as a Change in Coordinate System.

UNIT – III

Representing Curves & Surfaces
Polygon Meshes, Parametric Cubic Curves, Quadric Surfaces.

Solid Modeling
Representing Solids, Regularized Boolean Set Operations, Primitive Instancing, Sweep Representations, Boundary Representations, Spatial Partitioning Representations, Constructive Solid Geometry, Comparison of Representations, User Interfaces for Solid Modeling.

UNIT – IV

Introductory Concepts: Multimedia, Definition, CD-ROM and the multimedia highway, Uses of Multimedia, Introduction to making multimedia – The stages of Project, the hardware & software requirements to make good multimedia, Multimedia skills and training, Training Opportunities in Multimedia, Motivation for Multimedia usage.

Text Books:
1. Foley, Van Dam, Feiner, Hughes, Computer Graphics Principles & Practice, 2000.
2. Ralf Skinmetz and Klana Naharstedt, "Multimedia: Computing, Communications and Applications", Pearson, 2001.

References Books:
1. D. Harn & Baker: Computer Graphics, Prentice Hall of India, 1986.
2. D.J. Gibbs & D.C. Tsichritzis: Multimedia Programming Object, Environment & Framework, 2000
3. Foley, J.D. & Van Dam, A: Fundamentals of Interactive Computer Graphics.
4. Rogers & Adams, "Mathematical Elements for Computer Graphics", McGraw Hill, 1989.
5. Tay Vaughan, "Multimedia: Making it Work", TMH, 2000.

E-Commerce

COURSE OBJECTIVE:

1. To understand the interest and opportunity of e-commerce.
2. To know how to plan and how to manage e-commerce solutions.
3. To apply processes of e-commerce and to analyze and understand the human, technological and business environment associated with e-commerce.
4. To know how to use technologies to build e-commerce websites.

COURSE OUTCOME:

1. Define and analyze the principles of E-commerce and basics of World Wide Web.
2. Define and analyze the concept of electronic data interchange and its legal, social and technical aspects.
3. Define and analyze the security issues over the web, the available solutions and future aspects of e-commerce security.
4. Define and analyze the concept of E-banking, electronic payment systems.

UNIT-I

Introduction to E-Commerce: The Scope of Electronic Commerce, Definition of Electronic Commerce, Electronic Commerce and the Trade Cycle, Electronic Markets, Electronic Data Interchange, Internet Commerce, E-Commerce in Perspective.

Business Strategy in an Electronic Age: Supply Chains, Porter's Value Chain Model, Inter Organizational Value Chains, Competitive Strategy, Porter's Model, First Mover Advantage, Sustainable Competitive Advantage, Competitive Advantage using E-Commerce, Business
, Introduction to Business Strategy, Strategic Implications, of IT,, Technology,
Business, , Environment,, Business, Capability,, Existing, Business, Strategy,, Strategy
Formulation, & Implementation, Planning, E-Commerce, Implementation,, E-Commerce
Evaluation.

UNIT – II

Business -to-Business Electronic Commerce: Characteristics of B2B EC, Models of B2B EC, Procurement Management Using the Buyer's Internal Marketplace, Supplier-Oriented Marketplace, Intermediary-Oriented Marketplace, Just-in-Time Delivery, Other B2B Models, Auctions and Services from Traditional to Internet-Based EDI, Integration with Back-end Information Systems, The Role of Software Agents for B2B EC, Electronic Marketing in B2B, Solutions of B2B EC, Managerial Issues, Electronic Data Interchange (EDI), EDI: The Nuts and Bolts, EDI & Business.

Intranet and Extranet: Automotive Network Exchange, The Largest Extranet, Architecture of the Internet, Intranet, and Extranet, Intranet Software, Applications of Intranets, Intranet Application Case Studies, Considerations in Intranet Deployment,, The Extranets, The Structure of Extranets, Extranet Products & Services, Applications of Extranets, Business Models of Extranet Applications, Managerial Issues.,

UNIT – III

Electronic Payment Systems: Is SET a Failure, Electronic Payments & Protocols, Security Schemes in Electronic Payment Systems, Electronic Credit Card System on the Internet, Electronic Fund Transfer and Debit Cards on the Internet, Stored-Valued Cards and E-Cash, Electronic Check Systems, Prospect of Electronic Payment Systems, Managerial Issues.

Public Policy: From Legal Issues to Privacy: EC-Related Legal Incidents, Legal, Ethical & Other Public Policy Issues, Protecting Privacy, Protecting Intellectual Property, Free Speech, Internet Indecency & Censorship, Taxation & Encryption Policies, Other Legal Issues: Contracts, Gambling & More, Consumer & Seller Protection in EC.

UNIT – IV

Infrastructure for EC: It takes more than Technology, A Network of Networks, Internet Protocols, Web-Based client/ Server, Internet Security, Selling on the Web, chatting on the Web, Multimedia delivery, Analyzing Web Visits, Managerial issues.

Economics, Global & Other Issues in EC: Competition in Marketspace, Some Issues in Digital Economy and Success Factors, Impacts on Industry Structure, Intermediaries, and Others, virtual Communities, Global Electronic Commerce, Electronic Commerce in Small companies, Research in EC, The Future of EC.

Text Books:
1. David Whiteley, "E-Commerce", Tata McGraw Hill, 2000
2. Eframi Turban, Jae Lee, David King, K. Michale Chung, "Electronic Commerce", Pearson Education, 2000

BCA 605-P   External Marks:30
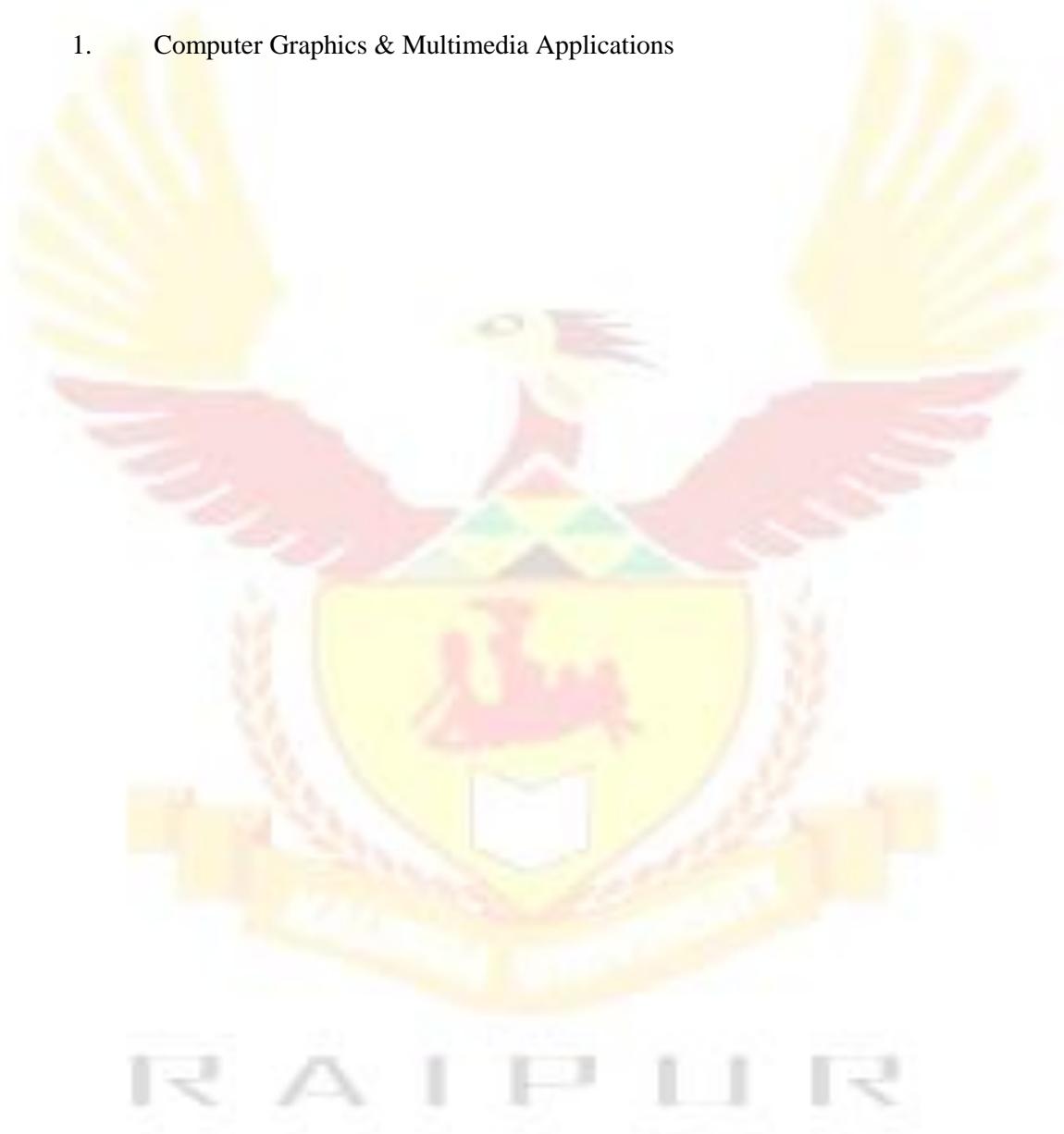   Internal Marks: 20

Practical –VI

Practical will be based on following Paper:

1.   Computer Graphics & Multimedia Applications

BCA 606   External Marks:70
                                                 Internal Marks: 30

Major Project

Evaluation will be based on Summer Training held after fourth semester and will be conducted by the college committee only.

Environmental Science

COURSE OBJECTIVE:

1. Demonstrate the importance of interdisciplinary nature of environmental and health risk assessment.
2. The ability to develop a document in Environmental Assessment or Environmental Impact Statement.
3. Make aware of professional development, life-long learning, and current global and contemporary issues in environmental and health risk assessment.
4. Make aware of professionalism, ethics, and environmental laws and regulations

COURSE OUTCOME:

1. Acquire skills to understand environment and its various components, related issues and problems, identifying and solving them.
2. Participate and be actively involved at all levels in working towards the benefits of environment.
3. Gain a variety of experiences and acquire knowledge to save the environment for future generations.
4. Acquire an awareness of the environment as a whole, its allied problems and sensitivity.

UNIT – I

General: Environmental segments, environmental degradation, environmental impact assessment.
Concept of Ecosystem: Fundamental of Ecology and Ecosystem, components of ecosystem, food-chain, food-web, trophic levels, energy flow, cycling of nutrients, major ecosystem types (forest, grass land and aquatic ecosystem).

UNIT – II

Air Pollution: Atmospheric composition, energy balance, classification of air pollutants, source and effect of pollutants – Primary (CO, SO_x, NO_x, particulates, hydrocarbons), Secondary [photochemical smog, acid rain, ozone, PAN (Peroxy Acetyl Nitrate)], green house effect, ozone depletion, atmospheric stability and temperature inversion, Techniques used to control gaseous and particulate pollution, ambient air quality standards.

UNIT – III

Water Pollution: Hydrosphere, natural water, classification of water pollutants, trace element contamination of water, sources and effect of water pollution, types of pollutants, determination and significance of D.O., B.O.D., C.O.D. in waste water, Eutrophication, methods and equipment used in waste water treatment preliminary, secondary and tertiary.

UNIT – IV

Land Pollution & Noise Pollution: Lithosphere, pollutants (agricultural, industrial, urban waste,

hazardous waste), their origin and effect, collection of solid waste, solid waste management, recycling and reuse of solid waste and their disposal techniques (open dumping, sanitary land filling, thermal, composting).

Noise Pollution: Sources, effect, standards and control.

UNIT – V

Environmental Biotechnology: Definition, current status of biotechnology in environmental protection, bio-fuels, bio-fertilize, bio-surfactants, bio-sensor, bio-chips, bio-reactors.

Pollution Prevention through Biotechnology: Tannery industry, paper and pulp industry, pesticide industry, food and allied industry.

Text Books

1.   Environment and Ecology by Piyush Kant Pandey and Dipti Gupta (Sum India Publication)
2.   A Textbook of Environmental Chemistry and Pollution Control by S.S. Dara (S. Chand and Company)

Reference Books:

1.   Masters, G.M. Introduction to Environment Engineering and Science (Prentice Hall of India).
2.   Environmental Chemistry by A.K. Dey (Eastern Ltd.).
3.   Environmental Chemistry by B.K. Sharma (Krishna Prakashan).
4.   Nebel B.J. Environmental Science (Prentice Hall of India-1987).
5.   Environmental Biotechnology by S.N. Jogdand (Himalaya Publishing House).
6.   Introduction to Environmental Biotechnology by A.K. Chatterji (Prentice Hall of India).