KAKATIYA UNIVERSITY
WARANGAL-506009

Bachelor of Computer Application (BCA)
III year Syllabus

(With effect from 2015-16)

DEPARTMENT OF COMPUTER SCIENCE

University College, KU, Warangal-506009

BCA III YEAR I SEMESTER

Code	Subject	Workload Per Week	Marks		
			External	Internal	Total
BCA51	Multimedia Systems And Applications	T (4)	70	30	100
BCA52	Object Oriented Design in UML	T (4)	70	30	100
BCA53	Visual Programming	T (4)	70	30	100
BCA54	E-Commerce Technologies	T (4)	70	30	100
BCA55	Cryptography and Network Security	T (4)	70	30	100
BCA56	Multimedia Systems And Applications- lab	L (4)	50	0	50
BCA57	Visual Programming- Lab	L (4)	50	0	50

BCA III YEAR II SEMESTER

Code	Subject		Workload Per Week	Marks		
				External	Internal	Total
BCA61	Elective A1/B1/C1		T(4)	70	30	100
	A1	Artificial Intelligence				
	B1	Theory of Computation				
	C1	Digital Image Processing				
BCA62	Elective A2/B2/C2		T(4)	70	30	100
	A2	Data mining				
	B2	Android Programming				
	C2	Unix programming				
BCA63	Major project (including Seminars)			300	100	400

BCA III YEAR I SEMESTER

Code	Subject	Workload Per Week	Marks		
			External	Internal	Total
BCA51	Multimedia Systems And Applications	T (4)	70	30	100
BCA52	Object Oriented Design in UML	T (4)	70	30	100
BCA53	Visual Programming	T (4)	70	30	100
BCA54	E-Commerce Technologies	T (4)	70	30	100
BCA55	Cryptography and Network Security	T (4)	70	30	100
BCA56	Multimedia Systems And Applications- lab	L (4)	50	0	50
BCA57	Visual Programming- Lab	L (4)	50	0	50

MULTIMEDIA SYSTEMS AND APPLICATIONS

UNIT I

Multimedia: Introduction, Definitions, Where to Use Multimedia- Multimedia in Business, Schools, Home, Public Places, Virtual Reality; Delivering Multimedia.

Text: Meaning, Fonts and Faces, Using Text in Multimedia, Computers and Text, Font Editing and Design Tools, Hypermedia and Hypertext.

Images: Before You Start to Create, Making Still Images, Color.

UNIT II

Sound: The Power of Sound, Digital Audio, MIDI Audio, MIDI vs. Digital Audio, Multimedia System Sounds, Audio File Formats. Adding Sound to Your Multimedia Project.

Animation: The Power of Motion, Principles of Animation, Animation by Computer, Making Animations.

UNIT III

Video: Using Video, How Video Works and Is Displayed, Digital Video Containers, Obtaining Video Clips, Shooting and Editing Video.

Making Multimedia: The Stages of a Multimedia Project, the Intangibles, Hardware, Software, Authoring Systems

Planning and Costing: The Process of Making Multimedia, Scheduling, Estimating; Designing and Producing.

UNIT IV

The Internet and Multimedia: Internet History, Internetworking, Multimedia on the Web.

Designing for the World Wide Web: Developing for the Web, Text for the Web, Images for the Web, Sound for the Web, Animation for the Web, Video for the Web.

Delivering: Testing, Preparing for Delivery, Delivering on CD-ROM, DVD and World Wide Web, Wrapping.

Text book:

1. Tay Vaughan, “Multimedia: Making it work”, TMH, Eighth edition.

Reference books:

1. Ralf Steinmetz and Klara Naharstedt, “Multimedia: Computing, Communications Applications”, Pearson.
2. Keyes, “Multimedia Handbook”, TMH.
3. K. Andleigh and K. Thakkar, “Multimedia System Design”, PHI.
4. Spoken Tutorial on “GIMP”as E-resource for Learning:-http://spoken-tutorial.org
5. Spoken Tutorial on “Blender” as E-resource for Learning:-http://spoken-tutorial.org

OBJECT ORIENTED DESIGN IN UML

UNIT - I

Introduction to UML: Importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture, Software Development Life Cycle.

UNIT II

Basic Structural Modeling: Classes, Relationships, common Mechanisms, and diagrams.

Advanced Structural Modeling: Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages.

UNIT - III

Class & Object Diagrams: Terms, concepts, modeling techniques for Class & Object Diagrams.

Basic Behavioral Modeling-I: Interactions, Interaction diagrams.

UNIT-IV

Basic Behavioral Modeling-II: Use cases, Use case Diagrams, Activity Diagrams.

Case Study: The Unified Library application

TEXT BOOKS

1. Grady Booch, James Rumbaugh, Ivar Jacobson : The Unified Modeling Language User Guide, Pearson Education.
2. Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado: UML 2 Toolkit, WILEY-Dreamtech India Pvt. Ltd.

REFERENCES

1. Meilir Page-Jones: Fundamentals of Object Oriented Design in UML, Pearson Education.
2. Pascal Roques: Modeling Software Systems Using UML2, WILEY-Dreamtech India Pvt. Ltd.
3. Atul Kahate: Object Oriented Analysis & Design, The McGraw-Hill Companies.
4. Mark Priestley: Practical Object-Oriented Design with UML,TATA McGrawHill
5. Craig Larman Appling UML and Patterns: An introduction to Object - Oriented Analysis and Design and Unified Process, Pearson Education.

VISUAL PROGRAMMING

UNIT – I

Introduction: Visual Basic, Visual Studio Integrated Development Environment, Test-Driving the Visual Basic. Overview of the Visual Studio 2012 IDE, Menu Bar and Toolbar, Navigating the Visual Studio IDE, Using Help, Using Visual App Development to Create a Simple App that Displays Text and an Image.

Introduction to Visual Basic Programming: Introduction, Programmatically Displaying Text in a Label, Addition Program, Building the Addition Program, Memory Concepts, Arithmetic,Decision Making-Equality and Relational Operators.

Introduction to Problem Solving and Control Statements: Introduction, Algorithms, Pseudocode Algorithm, Control Structures, If ... Then Selection Statement, If ... Then ... Else Selection Statement, Nested If ... Then ... Else Selection Statements, Nested Control Statements, Using the Debugger: Locating a Logic Error.

UNIT – II

Problem Solving and Control Statements: Introduction, For ... Next Repetition Statement, Examples Using the For ... Next Statement, Nested Repetition Statements, Select ... Case Multiple-Selection Statement, Do ... Loop While and Do ... Loop Until Repetition Statements, Using Exit to Terminate Repetition Statements, Using Continue in Repetition Statements, Logical Operators,

Methods: Introduction, Classes and Methods, Subroutines - Methods That Do Not Return a Value, Functions - Methods That Return a Value, Implicit Argument Conversions, Option Strict and Data-Type Conversions, Passing Arguments - Pass-by-Value vs. Pass-by-Reference, Scope of Declarations, Method Overloading, Optional Parameters, Using the Debugger – Debugging Commands

Arrays: Introduction, Arrays, Declaring and Allocating Arrays, Initializing the Values in an Array, Summing the Elements of an Array, Passing an Array to a Method, For Each ... Next Repetition Statement, Rectangular Arrays, Resizing an Array with the ReDim Statement.

UNIT – III

Windows Forms GUI: A Deeper Look: Introduction, Controls and Components, Creating Event Handlers, Control Properties and Layout, GroupBoxes and Panels, ToolTips, Mouse-Event Handling, Keyboard-Event Handling, Menus, MonthCalendar Control, DateTimePicker Control, LinkLabel Control, ListBox and CheckedListBox Controls, Multiple Document Interface (MDI) Windows, Visual Inheritance, Animation with the Timer Component. Exception Handling: A Deeper Look (Appendix)

Object-Oriented Programming - Classes and Objects: Introduction, Classes, Objects, Methods and Instance Variables, Account Class, Value Types and Reference Types, Class Scope, Object Initializers, Auto-Implemented Properties, Using Me to Access the Current Object, Garbage Collection, Shared Class Members, Const and ReadOnly Fields, Shared Methods and Class Math, Object Browser.

UNIT IV

Object-Oriented Programming - Inheritance and Polymorphism : Introduction, Base Classes and Derived Classes, Class Hierarchy, Constructors in Derived Classes, Protected Members, Introduction to Polymorphism - A Polymorphic Video Game, Abstract Classes and Methods,

Databases and LINQ : Introduction, Relational Databases, A Books Database, LINQ to Entities and the ADO.NET Entity Framework, Querying a Database with LINQ, Dynamically Binding Query Results, Retrieving Data from Multiple Tables with LINQ, Creating a Master/Detail View App.

TEXT BOOKS:

1. Visual Basic 2012: How to Program by Paul Deitel, Harvey Deitel, Abbey Deitel, Sixth Edition, 2014.

E-COMMERCE TECHNOLOGIES

UNIT I

An introduction to Electronic commerce: What is E-Commerce (Introduction And Definition), Main activities E-Commerce, Goals of E-Commerce, Technical Components of E-Commerce, Functions of E-Commerce, Advantages and disadvantages of E-Commerce, Scope of E-Commerce, Electronic Commerce Applications, 9 Electronic Commerce and Electronic Business(C2C)(C2G,G2G, B2G, B2P, B2A, P2P, B2A, C2A, B2B, B2C)

UNIT II

The Internet and WWW: Evolution of Internet, Domain Names and Internet Organization (.edu, .com, .mil, .gov, .net etc.) , Types of Network, Internet Service Provider, World Wide Web, Internet & Extranet, Role of Internet in B2B Application, building own website, Cost, Time, Reach, Registering a Domain Name, Web promotion, Target email, Baner, Exchange, Shopping Bots

UNIT III

Electronic Data Exchange: Introduction, Concepts of EDI and Limitation, Applications of EDI, Disadvantages of EDI, EDI model,Electronic Payment System: Introduction, Types of Electronic Payment System, Payment Types, Value Exchange System, Credit Card System, Electronic Fund Transfer, Paperless bill, Modern Payment Cash, Electronic Cash

UNIT IV

Planning for Electronic Commerce: Planning Electronic Commerce initiates, Linking objectives to business strategies, Measuring cost objectives, Comparing benefits to Costs, Strategies for developing electronic commerce web sites
Internet Marketing: The PROS and CONS of online shopping, The cons of online shopping, Justify an Internet business, Internet marketing techniques, The E-cycle of Internet marketing, Personalization e-commerce.

BOOKS RECOMMENDED:

1. G.S.V.Murthy, E-Commerce Concepts, Models, Strategies- :- Himalaya Publishing House, 2011.
2. Kamlesh K Bajaj and Debjani Nag , E- Commerce , 2005.
3. Gray P. Schneider , Electronic commerce, International Student Edition, 2011,
4. Henry Chan, Raymond Lee, Tharam Dillon, Elizabeth Chang E-Commerce, Fundamentals And Applications, Wiely Student Edition, 2011

CRYPTOGRAPHY AND NETWORK SECURITY

UNIT I

Introduction: Security Trends, Security Attacks, Security Services, Security Mechanisms, Model for Network Security,

Symmetric Ciphers: Classical Encryption Techniques, Substitution Techniques, Transposition Techniques, Rotor Machines, Steganography.

UNIT II

Data Encryption Standard: Block Cipher Principles, The Data Encryption Standard, The Strength of DES, Differential and Linear Cryptanalysis, Block Cipher Design Principles. Advanced Encryption Standard: Evaluation Criteria For AES, The AES Cipher.

UNIT III

Public-Key Cryptography and RSA: Principles of Public-Key Cryptosystems, the RSA Algorithm,

Public-Key Cryptosystems: Key Management, Diffie-Hellman Key Exchange, Elliptic Curve Arithmetic, Elliptic Curve Cryptography.

UNIT IV

Message Authentication and Hash Functions: Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security of Hash Functions and Macs.

Digital Signatures and Authentication Protocols: Digital Signatures, Kerberos, X.509 Authentication Service, Public-Key Infrastructure.

TEXT BOOK:

1. W. Stallings, *Cryptography and Network Security Principles and Practices,* 4th Ed., Prentice-Hall of India, 2006.

BOOK RECOMMENDED

1. C. Pfleeger and S.L. Pfleeger, *Security in Computing,* 3rd Ed., Prentice-Hall of India, 2007.

2. M.Y. Rhee, Network Security, John Wiley and Sons, NY, 2002.

PRACTICAL: MULTIMEDIA SYSTEMS AND APPLICATIONS

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

Practical exercises based on concepts listed in theory using Presentation tools in office automation tool/ GIMP/Blender / Audacity/ Animation Tools/ Image Editors/ Video Editors.

Implement the followings using Blender -

1. Create an animation using the tools panel and the properties panel to draw the following – Line, pe , oval, circle, rectangle , square, pencil , brush , lasso tool
2. Create an animation using text tool to set the font , size , color etc.
3. Create an animation using **Free transform tool** that should use followings-

   Move Objects

   Skew Objects

   Stretch Objects

   Rotate Objects

   Stretch Objects while maintaining proportion

   Rotate Objects after relocating the center dot
4. Create an animation using layers having following features-

Insert layer, Delete layer, guide layer, Mask layer.

5. Modify the document (changing background color etc.)Using the following tools

   Eraser tool

   Hand tool

   Ink bottle tool

   Zoom tool

   Paint Bucket tool

   Eyedropper tool
6. Create an animation for bus car race in which both starts from the same point and car wins the race.

7. Create an animation in which text Hello gets converted into GoodBye (using motion/shape tweening).
8. Create an animation having five images having fade-in fade-out effect.
9. Create an scene to show the sunrise (using multiple layers and motion tweening)
10. Create an animation to show the ripple effect.
11. Create an animation (using Shape tweening and shape hints) for transforming one shape into another.
12. Create an animation for bouncing ball (you may use motion guide layer).

PRACTICAL: VISUAL PROGRAMMING

NOTE:

- All the concepts of programs from Text Book including exercises must be practice, execute and write down in the practical record book.
- Faculty must take care about UG standard programs it should be minimum 25 – 30.
- In the external lab examination student has to execute at least three programs with compilation and deployment steps are necessary.
- External Viva-voce is compulsory.

Example programs:

1. Print a table of numbers from 5 to 15 and their squares and Cubes.
2. Print the largest of three numbers.
3. Find the factional of a number n.
4. Enter a list of positive numbers terminated by zero. Find the sum and average of these numbers.
5. A person deposits Rs. 1000 in a fixed account yielding 5% interest. Complete the amount in the account at the end of each year for n years.
6. Read n numbers. Count the number of negative numbers, positive numbers and zeros in the list.
7. Read n numbers. Count the number of negative numbers, positive numbers and zeroes in the list.use arrays.
8. Read a single dimension array. Find the sum and average of these numbers.
9. Read a two dimension array. Find the sum of two 2D Array.
10. Create a database Employee and Make a form to allow data entry to **Employee Form** with the following command buttons:

Employee Form

Employee Name:	
Employee Id:	
Date of Joining:	
Designation:	
Department:	
Address:	
Basic Pay:	

PREV	NEXT	FIRST	LAST	ADD	SAVE	DELETE	CANCEL

BCA III YEAR II SEMESTER

Code	Subject		Workload Per Week	Marks		
				External	Internal	Total
BCA61	Elective A1/B1/C1		T(4)	70	30	100
	A1	Artificial Intelligence				
	B1	Theory of Computation				
	C1	Digital Image Processing				
BCA62	Elective A2/B2/C2		T(4)	70	30	100
	A2	Data mining				
	B2	Android Programming				
	C2	Unix programming				
BCA63	Major project (including Seminars)			300	100	400

ELECTIVE A1: ARTIFICIAL INTELLIGENCE

UNIT I

Introduction: Introduction to Artificial Intelligence, Background and Applications, Turing Test and Rational Agent approaches to AI, Introduction to Intelligent Agents, their structure, behavior and environment.

UNIT II

Problem Solving and Searching Techniques: Problem Characteristics, Production Systems, Control Strategies, Breadth First Search, Depth First Search, Hill climbing and its Variations, Heuristics Search Techniques: Best First Search, A* algorithm, Constraint Satisfaction Problem, Means-End Analysis, Introduction to Game Playing, Min-Max and Alpha-Beta pruning algorithms.

UNIT III

Knowledge Representation: Introduction to First Order Predicate Logic, Resolution Principle, Unification, Semantic Nets, Conceptual Dependencies, Frames, and Scripts, Production Rules, Conceptual Graphs.
Programming in Logic (PROLOG)

UNIT IV

Dealing with Uncertainty and Inconsistencies: Truth Maintenance System, Default Reasoning, Probabilistic Reasoning, Bayesian Probabilistic Inference, Possible World Representations.
Understanding Natural Languages: Parsing Techniques, Context-Free and Transformational Grammars, Recursive and Augmented Transition Nets.

BOOKS RECOMMENDED:

1. DAN.W. Patterson, Introduction to A.I and Expert Systems – PHI, 2007.

2. Russell &Norvig, Artificial Intelligence-A Modern Approach**,** LPE, Pearson Prentice Hall, 2nd edition, 2005.

3. Rich & Knight, Artificial Intelligence – Tata McGraw Hill, 2nd edition, 1991.

4. W.F. Clocksin and Mellish, Programming in PROLOG, Narosa Publishing House, 3rd edition, 2001.

5. Ivan Bratko, Prolog Programming for Artificial Intelligence, Addison-Wesley, Pearson Education, 3rd edition, 2000.

ELECTIVE B1: THEORY OF COMPUTATION

UNIT I

Computer Hardware And System Software: Introduction, Computer Hardware and Types of System Software, Man-machine Communication Spectrum.

INTRODUCTION TO COMPILERS: Introduction, Theory of Computer Languages, Design of a Language, Evolution of Compilers, Stages of Compilation.

UNIT II

LEXICAL ANALYSIS: Introduction, Alphabets and Tokens in Computer Languages, Representation of Tokens and Regular Expression, Token Recognition and Finite State Automata, Lexical Analysis Tool

SYNTAX ANALYSIS: Introduction, Context-free Grammar and Structure of Language, Parser and its Types, Top-down Parser, Bottom-up Parser, Parser Generator Tool (Yacc),

UNIT III

INTERMEDIATE CODE GENERATION: Introduction, Need for Intermediate Code, Types of Intermediate Code, Semantic Analysis.

OPTIMIZATION: Introduction, Hints on Writing Optimized Code at User Level, Construction of Basic Blocks and Processing.

UNIT IV

CODE GENERATION: Introduction, Issues in Code Generation, Target Machine Architecture

COMPILER WRITING TOOLS: Introduction, Lexical Tools, Syntactic Tools,

TEST BOOK:

1. K. Muneeswaran, Compiler Design (with CD), Oxford university press, 2012

REFERENCE BOOKS

1. Santanu Chattopadhyaya, Systems Programming, PHI, 2011.
2. Alfred V. Aho, Monica S. Lam, Ravi Sethi, Jeffrey D. Ullman, Compilers: Principles, Techniques, and Tools, 2nd edition, Prentice Hall, 2006.
3. D. M. Dhamdhere, Systems Programming, Tata McGraw Hill, 2011.
4. Leland Beck, D. Manjula, System Software: An Introduction to System Programming, 3rd edition, Pearson Education, 2008.
5. Grune D, Van Reeuwijk . K, Bal H. E, Jacobs C J H, Langendoen K, Modern Compiler Design, 2nd edition, Springer, 2012

ELECTIVE C1: DIGITAL IMAGE PROCESSING

UNIT - I

DIGITAL IMAGE FUNDAMENTALS: What is Digital Image Processing. fundamental Steps in Digital Image Processing, Components of an Image processing system, elements of Visual Perception. Image Sensing and Acquisition, Image Sampling and Quantization, Some Basic Relationships between Pixels, Linear and Nonlinear Operations.

UNIT - II

IMAGE TRANSFORMS: Two-dimensional orthogonal & unitary transforms, properties of unitary transforms, two dimensional discrete Fourier transform. Discrete cosine transform, sine transform, Hadamard transform, Haar transform, Slant transform, KL transform.

Unit III

ENHANCEMENT: Image Enhancement in Spatial domain, Some Basic Gray Level Trans -formations, Histogram Processing, Enhancement Using Arithmetic/Logic Operations.

Basics of Spatial Filtering Image enhancement in the Frequency Domain filters, Smoothing Frequency Domain filters, Sharpening Frequency Domain filters, homomorphic filtering.

UNIT - IV

Model of image degradation/restoration process, noise models, Restoration in the Presence of Noise, Only-Spatial Filtering Periodic Noise Reduction by Frequency Domain Filtering, Linear Position-Invariant Degradations, inverse filtering, minimum mean square error (Weiner) Filtering, Color Fundamentals. Color Models, Pseudo color Image Processing., processing basics of full color image processing

TEXT BOOK:

1. “Digital Image Processing”, Rafael C. Gonzalez, Richard E. Woods, et.al, TMH, 2nd Edition 2010.

REFERENCE BOOKS:

1. “Fundamentals of Digital Image Processing”, Anil K. Jain, Pearson Education, 2001.
2. “Digital Image Processing and Analysis”, B. Chanda and D. Dutta Majumdar, PHI, 2003.

ELECTIVE A2: DATA MINING

UNIT I

Data Mining and Knowledge Discovery Process: data mining, Data Mining Differ from Other Approaches - The Knowledge Discovery Process-Introduction, Knowledge Discovery Process, Knowledge Discovery Process Models.

Data Understanding: data, Concepts of Learning, Classification, and Regression

UNIT II

Data Mining: Methods for Constructing Data Models: Unsupervised Learning: Clustering-From Data to information Granules or Clusters, Categories of Clustering Algorithms, Hierarchical Clustering, Objective Function-Based Clustering, Cluster Validity, random Sampling and Clustering as a Mechanism of Dealing with large datasets.

UNIT III

Association Rules – Introduction, Association Rules and transactional Data , Mining Single Dimensional , Single-Level Boolean Association Rules, Mining Other Types of Association Rules.

Supervised Learning: Bayesian Methods, Regression- Decision Trees, Rule and Hybrids Algorithms.

UNIT IV

Text Mining: Introduction, Information Retrieval Systems, Improving Information Retrieval Systems.

Data Security, Privacy and Data Mining: Privacy in Data Mining, Privacy Versus Levels of Information Granularity, Distributed Data Mining, Collaborative Clustering.

Text Books:

1. Data mining A knowledge discovery approach , Pedrycz, Kurgan, Springer , 2007

References:

1. Data mining Concepts and Techniques , Micheline Kamber, third edition, MK Elsevier publications
2. Principles of data mining , David hand Heikki Mannila , PHI publications-2004

ELECTIVE B2: ANDROID PROGRAMMING

UNIT I

Introduction: History of Android, Introduction to Android Operating Systems, Android Development Tools, Android Architecture.

UNIT II

Development Tools: Installing and using Eclipse with ADT plug-in, Installing Virtual machine for Android sandwich/Jelly bean (Emulator), configuring the installed tools, creating a android project – Hello Word, run on emulator, Deploy it on USB-connected Android device.

UNIT III

User Interface Architecture: Application context, intents, Activity life cycle, multiple screen sizes.
User Interface Design: Form widgets, Text Fields, Layouts, Button control, toggle buttons, Spinners (Combo boxes), Images, Menu, and Dialog.

UNIT IV

Database: Understanding of SQLite database, connecting with the database.

Book Recommended:

1. Android application development for java programmers. By James C. Sheusi. Publisher: Cengage Learning, 2013.

ONLINE READING / SUPPORTING MATERIAL**:**

1. http://www.developer.android.com
2. http://developer.android.com/about/versions/index.html
3. http://developer.android.com/training/basics/firstapp/index.html
4. http://docs.oracle.com/javase/tutorial/index.htm (Available in the form of free downloadable ebooks also).
5. http://developer.android.com/guide/components/activities.html
6. http://developer.android.com/guide/components/fundamentals.html
7. http://developer.android.com/guide/components/intents-filters.html.
8. http://developer.android.com/training/multiscreen/screensizes.html
9. http://developer.android.com/guide/topics/ui/controls.html
10. http://developer.android.com/guide/topics/ui/declaring-layout.html
11. http://developer.android.com/training/basics/data-storage/databases.html

ELECTIVE C2: UNIX PROGRAMMING

UNIT I

Introduction: Introduction to UNIX, Different Flavours of UNIX, Features of UNIX, Architecture of UNIX. Understanding the UNIX Command: Locating Commands, Internal and External Commands, Command Structure, Flexibility of Command Usage, man: Browsing the Manual Pages On-Line.
General Purpose Utilities: cal, date, echo, printf, bc, script, passwd, who, uname, tty, sty.
The File System: The File, What"s in a (File)name?, The Parent-Child Relationship, pwd, cd, mkdir, rmdir, Absolute Pathnames, Relative Pathnames, ls.

UNIT II

Handling Ordinary Files: cat, cp, rm, mv, more, file, wc, od, cmp, comm., diff, gzip, gunzip, tar, zip, unzip.
Basic File Attributes: ls-l, The –d option, File Ownership, File Permissions, chmod, Directory Permissions.
The VI Editor: vi Basics, Input Mode, Saving Text and Quitting, Navigation, Editing Text, Undoing Last Editing Instructions, Repeating the Last Command, Searching for a pattern, Substitution.
The Shell: The shells Interpretive Cycle, Shell offerings, Pattern Matching- The Wild Cards, Escaping and Quoting, Redirecton: The Three standard Files, /dev/nul and /dev/tty: Two Special Files, Pipes, tee, Command Substitution, Shell Variables.

UNIT III

Simple Filters, Regular Expressions and Grep Family: The sample Database, pr, head, tail, cut, paste, sort, uniq, tr. grep, egrep, sed.
Shell Programming: Shell Scripts, Read: Making Scripts Interactive, Command Line Arguments, Exit status of a command, The Logical Operators, Conditional Execution, Exit,, The if Conditional, The Case Conditional, expr: Computation, While, until, for, trap, Sample Validation.

UNIT IV

awk – An Advanced Filter: Simple awk filtering, Splitting a line into fields, printf, The comparison operators, Number Processing, Variables, The –f Option, The BEGIN and END Sections, Built in Variables, Arrays, Functions, Control Flow Statements.
File Management: File Structures, System Calls for File Management – create, open, close, read, write.

TEXT BOOK:

1. Unix System Concepts And Applications By Sumithaba Das (Tata Mcgraw Hill)
2. Unix Net Work Programming By W.Richard Stevens(Phi/Addision Wesley Two Columes)

REFERENCE BOOK

1. Unix The Complete Reference By Rosen ,Host Farber And Rosinski-Tatamcgraw Hill
2. The Unix Programming Environment By Brian W. Kernigham& Rob Pike -Phi

PROJECT GUIDE LINES

1. Maximum 2 students shall be allowed to take up a project.
2. Guiding one project shall be considered as 4 hours of practical per week as the work load for the concerned internal guide.
3. Each student shall submit his/her project synopsis to the concerned guide within 15days in consultation with internal guide from the commencement of the respective semester.
4. Each student has to carry out 2 project seminars compulsorily in project duration.
5. Each seminar will be considered for their internal assessment (IA).

Scheme of valuation - 400 Marks

- IA – 100 Marks
    - Synopsis - 20 Marks
    - Seminar 1 - 40 Marks
    - Seminar 2 - 40 Marks
- Dissertation – 300 Marks
    - Documentation - 150 Marks
    - Presentation / Demonstration - 100 Marks
    - Viva- 50 Marks

SCHEME OF QUESTION PAPER

FACULTY OF SCIENCES
Bachelor of Computer Application (BCA)
V/VI Semesters
KAKATIYA UNIVERSITY, WARANGAL
Code: Name of the Paper

Time: 3 hrs **Total Marks: 70**

Section - A

1. Answer any six from the following **(6 X 5 = 30)**

a. from unit I
b. from unit I
c. from unit II
d. from unit II
e. from unit III
f. from unit III
g. from unit IV
h. from unit IV

Section – B

Answer all questions **(4 X 10 = 40)**

2.	(a)	(OR)	(b)	from UNIT –I
3.	(a)	(OR)	(b)	from UNIT –II
4.	(a)	(OR)	(b)	from UNIT -III
5.	(a)	(OR)	(b)	from UNIT -IV