



SARVEPALLI RADHAKRISHNAN UNIVERSITY, BHOPAL

Yearly Scheme & Syllabus for BCA (Bachelor of Computer Application)

3rd Year Scheme

With Effect from Session 2017-18

Subject code	Subject Name	Internal Assessment		Theory		Practical	Grant Total
			Total		Total		
3BCA1	Foundation Course (Paper I)	10	20	25	80		100
3BCA2	Foundation Course (Paper II)	05		30			
3BCA3	Foundation Course (Paper III)	05		25			
3BCA4	Data Structures	10	20	40	80	50	150
3BCA5	ASP.Net with C#	10		40			
3BCA6	Programming With JAVA	10	20	40	80	50	150
3BCA7	Web Designing & Web Technology	10		40			
8BCA8	Fundamentals of Computer Networks	10	20	40	80		100
3BCA9	Data Communication & Computer Networks	10		40			
3BCA10	Major Project					50	50
Grant Total		80		320		150	550
Practical Group							
3BCA11	Data Structures & ASP.Net with C#					50	
3BCA12	Programming With JAVA & Web Designing & Web Technology					50	
3BCA10	Major project					50	
Total						150	

Sarvepalli Radhakrishnan University, Bhopal

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Third Year

Paper: 3BCA4 Data Structures

Max Marks: 40

Min Marks: 15

Unit 1: File Structures Terminology, File Organisation, Sequential Files, Structure, Operations, Disadvantages, Areas of use, Direct File Organisation, Indexed Sequential File Organisation.

UNIT-2: Stack and Queue: contiguous implementations of stack, various operations on stack, various polish notations-infix, prefix, postfix, conversion from one to another-using stack; evaluation of post and prefix expressions. Contiguous implementation of queue: Linear queue, its drawback; circular queue; various operations on queue; linked implementation of stack and queue- operations

Unit 3: Arrays Array's and Pointers, Representation of Arrays, Row Major Representation, Column Major Representation, Array's Applications

General List: list and it's contiguous implementation, it's drawback; singly linked list-operations on it; doubly linked list-operations on it; circular linked list; linked list using arrays.

UNIT-4: Searching, Hashing and Sorting: requirements of a search algorithm; sequential search, binary search, indexed sequential search, interpolation search; hashing-basics, methods, collision, resolution of collision, chaining; Internal sorting- Bubble sort, selection sort, insertion sort, quick sort, merge sort on linked and contiguous list, shell sort, heap sort, tree sort.

UNIT-5: Graphs: related definitions: graph representations- adjacency matrix, adjacency lists, adjacency multilist traversal schemes- depth first search, breadth first search; Minimum spanning tree; shortest path algorithm; kruskals & dijkstras algorithm.

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Third Year

Paper: 3BCA5 ASP.NET with C#

Max Marks: 40

Min Marks: 15

UNIT-I: Introduction to .NET Framework: .NET framework, MSIL, CLR, CLS, CTS, Namespaces and Assemblies Garbage Collection

Unit- 2: C# -The Basics and Console Applications in C#: Name Spaces -Constructor and Destructors, Function Overloading & Inheritance, Operator Overloading, Modifiers -Property and Indexers , Attributes & Reflection API, When to use Console Applications -Generating Console Output, Processing Console Input

Unit-3: ASP.NET: Introduction to ASP.NET, Working with Web and HTML Controls, Using Rich Server Controls, Login controls, Overview of ASP .NET Validation Controls, Using the Simple Validations, Using the Complex Validators Accessing Data using ADO.NET, Accessing Data using ADO.NET, Configuration Overview

Unit-4: Managing State: Preserving State in Web Applications and Page-Level State, Using Cookies to Preserve State, ASP.NET Session State, Storing Objects in Session State, Configuring Session State, Setting Up an Out-of-Process State Server, Storing Session State in SQL Server, Using Cookieless Session IDs, Application State Using the DataList and Repeater Controls, Overview of List-Bound Controls, Creating a Repeater Control and DataList Control

Unit-5: Themes and Master Pages: Creating a Consistent Web Site, ASP.NET 2.0 Themes - Master Pages, Displaying Data with the GridView Control Introducing the GridView Control, Filter Data in the GridView Control, Allow Users to Select from a DropDownList in the Grid, Add a Hyperlink to the Grid, Deleting a Row and Handling Errors

Sarvepalli Radhakrishnan University, Bhopal

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Third Year

Paper: 3BCA6 Programming with JAVA

Max Marks: 40

Min Marks: 15

UNIT- I: C++ Vs JAVA, JAVA and Internet and WWW, JAVA support systems, JAVA environment, JAVA program structure, Tokens, Statements, JAVA virtual machine, Constants & Variables, Data Types, Type Casting, Operators , Expressions & its Evaluation, Decision making and branching, Loops, Jumps in Loops, Labeled Loops

UNIT- II: Defining a class, Adding variables and methods, Creating objects, Accessing class members, Constructors, Method overloading , Static members, Nesting of methods,

UNIT – III: Inheritance: Extending a class, Overriding methods, Final variables and method~, Final classes, Finalizes methods, Abstract methods and classes, Visibility control

UNIT- IV: Arrays, One dimensional & two dimensional, Strings, Vectors, Wrapper classes, Defining interfaces, Extending interfaces, Implementing interfaces, Accessing interface Variables, System packages, Using system packages, Naming conventions, Creating packages, Accessing a package, Using package, Adding a class to a package, Hiding classes.

UNIT – V: Threads, Creating threads, Extending the threads class, Stopping and blocking a thread, Life cycle of a thread, Using thread methods, Thread exceptions, Thread priority, Synchronization, Implementing the runnable Interface.

Sarvepalli Radhakrishnan University, Bhopal

Yearly Syllabus for BCA (Bachelor of Computer Application)

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Paper: 3BCA7 Web Designing & Web Technology

Max Marks: 40

Min Marks: 15

UNIT – I: Client server Computing Concepts, Distributed computing on the Internet, Introduction to Web Pages, HTML, HTML Elements and pages, Formatting text & pages, including picture in a page, creating tables and lists, splitting pages into frames. HTML 5

UNIT – II: Site Design and Navigation: The home page Navigational tools. Formatting the body section using block level, using text level. Using font style, using phrase elements

UNIT – III: Java Script and Browser, Java Script and sever, Embedding Java Script & HTML, Java Script fundamentals Variables, Value Store house, statements, loops, condition and functions, objects properties and methods. Event handlers and non script tag.

UNIT – IV: Comparison of HTML, DHTML and XML web casting, Domain name selection , web server selection, Web hosting, uploading and downloading of web, incremental uploading of data, introduction to SQL Server, Introduction to user management in SQL – Server.

UNIT – V: Introduction to ASP, database handling with ASP, Connection object, record set object, request object, response object, cookies, creating tables and insert query through connection .

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Paper: 3BCA8 Computer Oriented Numerical Techniques

Max Marks: 40

Min Marks: 15

Unit -1: Computer Arithmetic Floating–Point Arithmetic and Errors, Rounding and Chopping of a Number and Associated Errors, Floating Point Representation of Numbers, Truncation errors and Taylor’s Series.

Unit -2: Interpolation with Equal Intervals Difference Table, Interpolation Methods, Newton Forward Difference Formula, Newton Backward Difference Formula, Interpolation with Unequal Intervals Lagrange’s Method, Divided Difference Method, Newton’s Divided Difference Method

Unit -3: Distributions: Binomial distribution, Poisson distribution and normal distribution, 2 distribution, Rectangular distribution, hyper geometric distribution.

Unit -4: Simultaneous linear equations: Solutions of simultaneous linear equations – Gauss elimination method and pivoting, ill conditioned equations and refinement of solutions, Gauss-seidal iterative methods. Solution of differential equation: Runge-Kutta fourth order method.

Unit -5: Methodology’s of Numerical Integration, Rectangular Rule, Trapezoidal Rule, Simpsons (1/3) Rule Euler’s method, Picard’s, Taylor’s series

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Paper: 3BCA9 Data Communication & Computer Networks

Max Marks: 40

Min Marks: 15

Unit -1: Basics of Computer Network Computer Network: Definition, Goals, Structure; Broadcast and Point-ToPoint Networks; Network Topology and their various Types; Types of Network: LAN, MAN, WAN; Server Based LANs & Peer-to-Peer LANs; Communications Types: Synchronous, Asynchronous; Modes of Communication: Simplex, Half Duplex, Full Duplex; Protocols and Standards

Unit -2: Network Models Design Issues of the Layer, Protocol Hierarchy, ISO-OSI Reference Model: Functions of each Layer, Various Terminology used in Computer Network, Connection-Oriented & Connectionless Services, Internet (TCP/IP) Reference Model, Comparison of ISO-OSI and TCP/IP Model

Unit -3: Transmission Media Transmission Media, Guided Media (Wired) : Coaxial Cable: Physical Structure, Standards, BNC Connector, Applications, Twisted Pair : Physical Structure, UTP vs STP, Connectors, Applications, Fiber Optics Cable: Physical Structure, Propagation Modes (Single Mode & Multimode), Fiber Sizes, Connectors , Applications , Advantages & Disadvantages; Unguided Media(Wireless): Electromagnetic Spectrum for Wireless Communication, Propagation Methods, (Ground, Sky, Line-of-Sight); Wireless Transmission: Radio Waves, Infrared, Micro-wave; Wireless LANs (IEEE 802.11), Architecture, MAC Sub Layer, Frame Format, Frame Types; Bluetooth, Architecture (Piconet, Scatternet, Bluetooth, Layers), Applications

Unit -4: Network Connectivity Devices Categories of Connectivity Devices, Passive and Active Hubs, Repeaters, Bridges, Switches (2-Layer Switch, 3-Layer, Switch (Router), Gateways, Network Security Devices (Firewalls, Proxy Servers)

Unit -5: Components of LAN Network Interface Card (NIC), Network Adapters, Components of NIC, Functions of NIC, Types of NIC; Ethernet : Basic Features, Types of Ethernet, Different Framing Format: IEEE 802.3, IEEE 802.4, IEEE 802.5 Unit 6 : Internet

Basics Internet:Growth, Architecture, Accessing, Internet Service Providers(ISP), Internet Addressing System:IP Address, DNS, URL; World Wide Web(WWW): Web Servers,Web Browsers, Search Engine; Concept of Intranet & Extranet.