TEACHING AND EXAMINATION SCHEME
Bachelor of Computer Applications - III Year

	Paper Name (Theory)	Lec	Exam Hours	MARKS	
				Min	Max
bca-301	Relational Database Management System	3	3	18	50
bca-302	JavaScript	3	3	18	50
bca-303	Computer Networks	3	3	18	50
bca-304	Programming in .NET with C#	3	3	18	50
bca-305	Internet Tools & Website Development	3	3	18	50
bca-306	Open Source Technology & Operating Systems	3	3	18	50
	Total of Theory Marks				**300**

	Paper Name (Practical)	Pract Hours	Exam Hours	MARKS	
				Min	Max
bca-307	.NET Programming with C#	3	3	18	50
bca-308	Web Development, Java Script, PHP, MySQL)	3	3	18	50
bca-309	Oracle ,SQL Programming& Linux	3	3	18	50
bca-310	Project	6	3	18	50
	Total of Practical Marks				**200**
	Total of Theory & Practical Marks				**500**

SCHEME OF EXAMINATION
BACHELOR OF COMPUTER APPLICATIONS

Theory:

Part A:
1. 10 Question of 1.5 mark each – 15 marks
2. Answer should not exceed more than 50 words
3. All questions are compulsory

Part B:
1. 5 Questions of 3 marks each – 15 marks
2. Answer should not exceed more than 50 words
3. All questions are compulsory

Part C:
1. 3 Questions of 7+7+6 marks each – 20 marks.
2. There will be an internal choice in each question.
3. Answer should not exceed 400 words

Practical & Projects:

Practical exams shall be conducted by one internal and one external examiner of a batch of 40 students in a day.

Duration of Practical exam is 3 hours.

A Laboratory Exercise File should be prepared by each student for each practical paper and should be submitted during practical examinations.

Practical of 50 marks distribution is as under:
   a. 30 marks for practical examination exercise for 3 questions
   b. 10 marks for Viva-voce
   c. 10 marks for Laboratory Exercise File

| **Duration: 3 hours** | **Max Marks: 50** |

bca-301Relational Database Management Systems

Object of database systems, data abstraction, data definition language, data manipulation language, database administrator database model, database system architecture. Entity relationship model, entities and entity sets their relationship, mapping constraints, generalization, aggregation, use of ER model for the design of databases, sequential, random, index sequential file organization, relational algebra, normalization up to DKNF.

Object Oriented modeling, class, different types of attributes, generalization, inheritance, aggregation, encapsulation, distributed database design, architecture of distributed processing system, data communication concept, data placement, placement of DDBMS, and other components, concurrency control techniques, recovery, transaction management, need of recovery, recovery techniques, serializability, two-phase locking.

Query optimization and processing, algorithm for external sorting, select and join, object and set operations, heuristics in query optimization, temporal database concept, multi-media database, data-mining, association rule, classification, application, data-warehousing, need, architecture, characteristics, data layer, XML tree data model, document, DTD schema, query, database, data-warehousing verses view

Security and integrity of databases, security specifications in SQL, access control, flow control, encryption of public key infrastructure, cryptography and types.SQL*PLUS Data types, Constraints, Operators, DDL, DML, PL/SQL syntax, Data types, PL/SQL functions, Error handling in PL/SQL, package functions, package procedures, Oracle transactions. Stored procedures & functions, creation and execution of procedures, triggers

Duration: 3 hours	**Max Marks: 50**

bca-302 JavaScript

Overview of JavaScript, object orientation and JavaScript, syntactic characteristics, primitives, operations, and expressions, screen output and keyboard input, control statements, object creation and modification, arrays, functions, constructors, pattern matching using regular expressions, errors in scripts.

JavaScript execution environment, the Document Object Model, elements access in JavaScript, events and event handling, handling events from body elements, handling events from text box and password elements, the DOM2 event model, the navigator object, DOM tree traversal and modification, positioning elements, moving elements, element visibility, changing colors and fonts, dynamic content, stacking elements, locating the mouse cursor, reacting to a mouse click, slow movement of elements, dragging and dropping elements.

| **Duration: 3 hours** | **Max Marks: 50** |

bca-303Computer Networks

OSI Model, significance of layer model, network, topology, network classification, switching and components.

Introduction to Ethernet, token ring, basic working and cable, bridges, routers, gateways, private and public networks

FDMA, TDMA, CDMA, personal communications system architecture, cordless telephony, digital enhanced cordless telecommunication.

Wireless technology: Land mobile vs satellite vs inbuilding communication system, cellular telephony, personal communication system/networks.

Perform and document fault isolation, Resolve or escalate, Verify and monitor resolution, IPv4 addressing and sub-netting IPv4 address types, Unicast, Broadcast, Multicast, private IPv4 addressing, IPv6 addressing scheme, IPv6 addressing and IPv6 Stateless Address Auto IPv6 address types, Global unicast, Unique local, Link local, Multicast, Modified EUI 64, Auto-configuration, Anycast

Wireless architecture for mobile computing, wireless LANs, end user devices, MAC protocols, IEEE 802.11, mobile IP, wireless TCP, hand of adhoc networks, unicast and multicast communication, blue tooth.

Duration: 3 hours	**Max Marks: 50**

bca-304Programming in .NET with C#

Introduction to .NET, .NET Framework features & architecture, CLR, Common Type System, MSIL, Assemblies and class libraries. Introduction to visual studio, Project basics, types of project in .Net, IDE of VB.NET- Menu bar, Toolbar, Solution Explorer, Toolbox, Properties Window, Form Designer, Output Window, Object Browser. The environment: Editor tab, format tab, general tab, docking tab. visual development.

Variables -Declaring variables, Data Types, Forcing variables declarations, Scope & lifetime of a variable, Control flow statements: conditional statement, loop statement. Constants, Arrays, types of arrays, Collections.

Subroutines, Functions, Passing variable number of arguments,Optional Arguments, Returning value from function, Msgbox & Inputbox.Class, overloading,constructor,inheritance,overriding, interfaces

Working with Forms : Loading, showing and hiding forms, controlling one form within another.Textbox, Label, Button, Listbox, Combobox, Checkbox,PictureBox, RadioButton, Panel, scroll bar, Timer, ListView, TreeView, toolbar, StatusBar.. OpenFileDialog, SaveFileDialog, FontDialog, ColorDialog, PrintDialog.Link Label.Designing menus : ContextMenu, access & shorcut keys.

Database programming with ADO.NET – Overview of ADO, from ADO to ADO.NET, Accessing Data using Server Explorer. Creating Connection, Command, Data Adapter and Data Set with OLEDB and SQLDB. Display Data on data bound controls, display data on data grid.Generating reports using CrystalReportViewer

Introduction to C#, variables, constants, identifiers, data types, expressions and operators, flow control and exception handling, control structures, properties, indexes, namespace, classes, objects, structures

Object oriented programming C#, pointers, delegates and events

Duration: 3 hours	**Max Marks: 50**

bca-305Internet Tools & Website Development

Internet – current state, hardware and software requirement, ISP, an internet account, web home page, URL, browser, security on web, searching tools, search engines, FTP, Gopher, Telnet, emails, TFTP

Web browser architecture, web page and multimedia, static dynamic and active web page, simple mail transfer protocol, simple network management protocol, hyper text transfer protocol

Basics of PHP: Introduction to PHP, what does PHP do? ,history of PHP , language basics ,data types , variables , expressions and operators , flow control statements , including code , embedding PHP in web pages.

Functions & Strings: Calling a function, defining a function, variable scope, function parameters, return values, variable functions, anonymous functions. Strings: Accessing individual characters, cleaning strings, encoding and escaping, comparing strings, manipulating and searching strings, regular expressions.

Arrays & Objects: Indexed Vs associative arrays, identifying elements of an array, storing data in arrays, multidimensional arrays, extracting multiple values, converting between arrays and variables, traversing arrays, sorting. Objects: Creating an object, accessing properties and methods, declaring a class, introspection.

MySQL Overview: Introduction, connecting to and disconnecting from the server , Entering queries , Creating and using a database , Creating and selecting a database , creating a table , loading data into a table , Retrieving information from a table , selecting all data , selecting particular rows , selecting particular columns , sorting rows , date calculations , working with NULL values , pattern matching , counting rows , using more than one tables.

MySQL databases in PHP: Introduction, connecting to a MySQL database, querying the database, Retrieving and displaying the results, modifying data, deleting data.

| **Duration: 3 hours** | **Max Marks: 50** |

bca-306Open Source Technology & Operating Systems

Introduction to Operating Systems, goals of OS, operation of OS, resource allocater and related functions, classes of OS, batch processing, multi-processing, time sharing, distributed, real time systems, system calls, system programs, structure of OS, layer design of DOS, Unix, virtual machine OS, kernel based OS.

Process concept, interacting process, threads, fundamental of scheduling, scheduling criteria, long medium short term scheduling, scheduling algorithms , structure of concurrent system, critical section, critical region, inter-process communication, monitor and semaphores, implementation and uses.

Logical versus physical address, swapping, contiguous allocation, segmentation, paging, segmentation with paging, kernel memory allocation, page replacement algorithm, virtual memory, virtual memory with paging, demand paging, dead lock, characterization, methods for handling dead locks, prevention, avoidance, thrashing, allocation of frame, virtual memory using segmentation,

Architecture of Distributed system, inter-process communication protocol, network OS, issues in distributed design, issues of distributed file system, network structure, distributed system structure, file system, coordination.

Linux: History, programmer interface, file manipulation, process control, kernel, signals, file system, block and inodes, stream editor, character transliteration, ed, vi editor and there commands.

Shell script, variables, file name expansion, shell commands, looping and making decisions, array, subprogram, C interface with Linux, simple shell programs.