

TEACHING AND EXAMINATION SCHEME
Bachelor of Computer Applications - III Year
W.E.F. 2022 - 23

Paper Name (Theory)	Lec	Exam Hours	MARKS	
			Min	Max
bca-301 Relational Database Management System	3	3	18	50
bca-302 Sales Force	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 Mobile Application Development	3	3	18	50
bca-308 Website Development and Computer Networks	3	3	18	50
bca-309 Open source and Sales Force	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

bca-301 Relational Database Management Systems

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.

bca-302Sales Force

Introduction to Cloud Computing, What is Cloud Computing, Advantages, Layers – Client, Application (Software as a Service (SaaS)), Platform (platform as a service (PaaS)), Infrastructure (infrastructure as a service" (IaaS)), Server. Deployment Models – Public cloudm Community Cloud, Hybrid Cloud, Private Cloud. Introduction to Salesforce, What is salesforce.com, Advantages, Products and Services – CRM – Salesforce CRM and other CRM, AppExchange, Configuration, Web services, Mobile support.

Introduction to Force.com Platform - Registering Developer Edition with Salesforce.com, Standard applications, Standard Tabs, Standard Objects and relationships, Links. Setup page – Personal Setup, Application Setup and Administration Setup.

Designing Applications on Force.com – I - Creating new application, Creating Custom objects, Creating Tabs – Custom Tabs, Web tabs, Adding text, Currency, Checkbox, Date fields, Creating Picklists, Field Dependencies.

Designing Applications on Force.com - II - Encrypted fields, field help, and field history tracking, Use master detail, lookup, and many-to-many Relationships, Custom button and links Creation, Rollup Summary field.

Manage security Understand salesforce licenses ,governor limits, Profile, create profile, create user, Organization-Wide-Default, Sharing Rule, Roles , understand object and record based sharing, Login history, password policies, user session settings, set trusted IP range, public group

Sales and Service Understand sales cloud using sales object -Product, price book, campaign, lead, account, contact, opportunity, Quotes, contract Understand Service Cloud using service objects – Account, contact, case, Solution Lead and case assignments, queue, web to case, web to lead, escalation rule, email to case , auto response.

Designing Applications on Force.com Automation –Creating an approval Process, Create an Email template for approvals, Create an Approval Process, create a Custom Profile, Create User, Test the Approval Process

Designing Applications on Force.com Automation –Workflows, Introducing Workflow Rules and workflow actions, Email Alerts – Email templates, Tasks, Field Updates – Queues and Time Dependent Workflow Actions. Workflow immediate action and time dependent workflow

Designing Applications on Force.com Automation –Process Builder, Create process builder, difference between process builder and workflow, immediate action and time dependent workflow, immediate actions – Create record, update record, email alert, call flow, call process etc. create process builder versions.

Reports and Dashboard –Introducing Reports and Custom Reports, Exporting Reports, Dashboards – Creating and Editing Dashboards, Adding Dashboard Snapshots to Home Page, Creating Additional Reports, Creating Custom Report Types. Design Home page

Duration: 3 hours	Max Marks: 50
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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

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.

Basics of NS2 - About NS2 and NAM, Purpose and Installation, Background and architecture, OTcl and C++ interfaces, Trace files and formats, Protocol support for NS2, Simulation object, Basic Syntax, Node creation, Finish procedure, Running NS2 and NAM, Invoking external commands within NS2, Nodes & Agents, Working of NS2 commands

Wired networks- Creating links, Sending traffic through NS2 links, Setting link parameters, Routing protocol support, Scenarios

Wireless networks - Additional parameters, Setting node positions, GOD object and Topography, Protocol support, Scenarios

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.LinkLabel.Designingmenus :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

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, hypertext 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, and 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.

bca-306 Open Source Technology & Operating Systems

Introduction to Operating Systems, goals of OS, operation of OS, resource allocator 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.