

# TEACHING AND EXAMINATION SCHEME

## Bachelor of Computer Applications - II Year

Paper Name (Theory)		Lec	Exam Hours	MARKS	
				Min	Max
bca-201	Communication Skills	3	3	18	50
bca-202	Python Programming	3	3	18	50
bca-203	Database Management Systems	3	3	18	50
bca-204	Java Programming	3	3	18	50
bca-205	C++ Programming for Object Oriented Systems	3	3	18	50
bca-206	Computer Graphics	3	3	18	50
<b>Total of Theory Marks</b>					<b>300</b>

  

Paper Name (Practical)		Pract Hours	Exam Hours	MARKS	
				Min	Max
bca-207	MS Access&Python Programming	3	3	18	50
bca-208	Java Programming	3	3	18	50
bca-209	C++ Programming & Computer Graphics	3	3	18	50
<b>Total of Practical Marks</b>					<b>150</b>

  

<b>Total of Theory &amp; Practical Marks</b>					<b>450</b>
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## **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

<b>Duration: 3 hours</b>	<b>Max Marks: 50</b>
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**bca-201Communication Skills**

Types of communications – oral communication, written communication – formal, informal, business letters – types of letter, writing letters, business correspondence, applying for a job, resume writing, filling an employment application.

Report writing – definition and determining reports purpose, report planning, collecting information, developing an outline, sections of report, types of report, making reports writing effective, drafting circulars, notices, agenda and minutes of meetings.

<b>Duration: 3 hours</b>	<b>Max Marks: 50</b>
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**bca-202Python Programming**

Programming basics and strings, numbers and operators, variables, making decisions

Functions, classes and objects, organizing programs, files and directories

Building modules, text processing,

Writing a GUI with Python, Accessing Databases

Python with XML, Network Programming, Programming with C, Numerical Programming,

Web Application and Web Services, Integrating Java with Python

**bca-203 Database Management Systems**

Overview of DBMS: Basic DBMS terminology, DBA and his responsibilities, physical and logical data independence, architecture of DBMS, distributed databases, structure design and Client/server architecture.

Entity-Relationship Model, entity, entity set, attributes, tuples, domains, keys, super and candidate key, overview of hierarchical, network and relational models, comparison of network, hierarchical and relational models

Relational Model: Storage organization for relations, relational algebra, set operators, relational operators, decomposition of relation schemes, functional dependencies normalization up to BCNF.

Relational Query Language: DDL, DML, DCL, database integrity, domain integrity, entity integrity, referential integrity

MS-Access: Create a Table in MS Access -Data Types, Field Properties, Fieldnames, types, properties, default values, format, caption, validationrules Data Entry Add record delete record and edit text Sort, find/replace,filter/select, re-arrange columns, freeze columns. Edit a Tables- copy, delete, import, modify table structure find replace.

Setting up Relationships- Define relationships, add a relationship, set a rule for Referential Integrity, change the join type, delete a relationship, save relationship Queries & Filter –difference between queries and filter,filter using multiple fields AND,OR,advance filter Queries create Query with one table,find record with select query, find duplicate record with query,find unmatched record with query, run query,save and change query.

Introduction to Forms Types of Basic Forms: Columnar, Tabular, Datasheet, Main/Subforms, add headers and footers, add fields to form, add text to form use label option button, check box,combo box, list box Forms Wizard, Create Template.

Introduction to Reports,Types of Basic Reports: Single Column, Tabular Report Groups/Total, single table report multi table report preview report print report, Creating Reports and Labels, Wizard

**bca-204Java Programming**

Introduction to Java, history, characteristics, Object Oriented Programming, data types, variables, arrays, difference between Java and C++Control statements: Selection, iteration, jump statements, operators

Classes and Methods: Introducing classes, Class fundamentals, Declaring Objects, Assigning object reference variables. Introducing method , Constructors, The this Keyword, Garbage Collection-Finalize() method, Overloading methods, Using objects as parameters, Argument Passing , Returning Objects, Recursion , static and final keyword , Nested and Inner Classes , String Class ,Command Line arguments.

Inheritance, Packages, Interfaces: Inheritance Basics , using super, method overriding , Dynamic method dispatch , abstract classes , Using final with inheritance , Packages , Access Protection, Importing packages ,Interfaces.

Exception Handling, Multithreading, Applet : Exception handling fundamentals, Types, Using try, catch, throw, throws and finally , Java thread model , Creating a Thread , Creating multiple threads,Thread priorities , synchronization , Inter-thread communication , Applet Basics , Applet Skeleton, HTML applet tag – Passing parameters to applet

I/O Streams, Utility Classes:I/O Streams- Byte Streams , Character Streams , Reading and Writing Files, Legacy Classes and Interface: Vector, Stack, The Enumeration Interface, Utility classes: StringTokenizer, Date, Calendar,Random, Scanner

Javax.Swing Package : JButton , JLabel,JTextField , JPasswordField, JRadioButton, JCheckBox, JComboBox ,JList,JToggleButton,JSpinner, JTabbedPane, JTable,JToolBar ,JToolTip , JFrame , JPanel , JDialog , JSlider, Introduction to Event Handling: Event Classes – Event Listener interfaces

<b>Duration: 3 hours</b>	<b>Max Marks: 50</b>
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### **bca-205C++ Programming for Object Oriented Systems**

Object Oriented Concepts, Tokens, Expressions and Control Structures Introduction: Basic Elements of Programming, Console I/O Operations.

Control Structures: Control and Looping Statements. Function: Function Prototyping, Call and Return by Reference, Inline Function, Default and Const Arguments, Function Overloading, Arrays, Manipulators and Enumeration.

Classes and Object, Object Oriented Methodology: Basic Concepts/Characteristics of OOP. Advantages and Application of OOP's, Procedural Programming Vs OOP

Classes and Objects: Specifying a Class, Creating Objects, Private & Public Data Members and Member Functions, Defining Inline Member Functions, Static Data Members and Member Functions. Arrays within Class, Arrays of Objects, Objects as Function Arguments, Returning Objects.

Constructors, Destructors, Operators Overloading and Inheritance. Constructors and Destructors: Introduction, Parameterized Constructors, Multiple Constructors in A Class, Constructors With Default Arguments, Dynamic Initialization of Objects, Copy Constructors, Dynamic Constructors, Const Objects, Destructors Operators Overloading: Definition, Unary and Binary Overloading, Rules for Operator Overloading.

Inheritance: Defining Derived Classes, Types of Inheritance, Constructors and Destructors in Derived Classes.

Pointers Virtual & Friend functions and file handling Pointers: Pointer to Objects, this Pointer, New and Delete Operators, Virtual Function, Friend Functions. Opening, Closing a File, File Modes, File Pointers and their Manipulation, Sequential Input and Output Operations: Updating a File, Random Access, and Error Handling During File Operations, Command Line Arguments.

**bca-206Computer Graphics**

Graphics hardware: The functional characteristics of the systems are emphasized

Input devices: Keyboard, touch panel, light pens, graphic tablets, joysticks, track ball, data glove, digitizer, image scanner, mouse, voice systems.

Hard copy devices: Input and non-impact printers such as line printer, dot matrix, laser, inkjet, electrostatic, flat bed and drum plotters.

Video Display Devices: Refresh cathode ray tube, raster scan displays, random scan displays, colour CRT monitors, direct view storage tube, flat panel displays, 3-D view devices, virtual reality, raster scan systems, random scan systems, graphics monitors and work stations.

Scan conversion algorithms for line, circle and ellipse, Bresenham's algorithms, area filling techniques, character generation.

2-dimensional graphics: Cartesian and Homogeneous co-ordinate system, Geometric transformations (translation, scaling rotation, reflection, shearing, 2-dimensional viewing transformation and clipping (line, polygon and text).