TEACHING AND EXAMINATION SCHEME
Bachelor of Computer Applications - I Year
W.E.F. 2020-2021

	Paper Name (Theory)	Lec	Exam Hours	MARKS	
				Min	Max
bca-101	Cyber Security Technologies & Practices	3	3	18	50
bca-102	Computer Fundamentals	3	3	18	50
bca-103	Data Structure	3	3	18	50
bca-104	Programming in C	3	3	18	50
bca-105	Financial Accounting Software	3	3	18	50
bca-106	Multimedia Basics	3	3	18	50
			Total of Theory Marks		**300**

	Paper Name (Practical)	Pract Hours	Exam Hours	MARKS	
				Min	Max
bca-107	Data Structure Lab	3	3	18	50
bca-108	C Programming Lab	3	3	18	50
bca-109	Multimedia& Financial Accounting Software	3	3	18	50
			Total of Practical Marks		**150**
			Total of Theory & Practical Marks		**450**

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-101Cyber Security Technologies & Practices

Information securityconcepts, Overview: Background and current scenario, types of attacks, goals for security, E-commerce security, Computer forensics, steganography

Security threats and vulnerabilities, overview of security threats, weak/strong passwords, insecure network connections, malicious code, programming bugs, cybercrime and cyber terrorism, information warfare and surveillance, virus, Trojan, worms, botnet, ransomware, shells, backdoors

Security management practices, overview of security management, information classification process, security policy, risk management, security procedures and guidelines, business continuity and disaster recovery, ethics and best practices

Security laws and standards, security assurance, security laws, intellectual property rights, international standards, security audit

Access control and intrusion detection, overview of identification and authorization, overview of intrusion detection systems, intrusion detection systems and intrusion prevention systems

Server management and Firewalls, user management, overview of Firewalls, type of Firewalls

Wireless networks and security, components of wireless networks, security issues in wireless

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

bca-102Computer Fundamentals

Introduction to Computer: Definition, Characteristics, Classification of Computers, Analog Computers, Digital Computers, Hybrid Computers, Classifications of computer on the basis of size and speed, different type of computers, generation of computers.

Computer keyboard, pointing devices, mouse, track ball, touch pad, joystick, touch – sensitive screens, pen – based systems, digitizer, data scanning devices, optical recognition systems, bar code readers, optical mark readers, optical scanners, drum scanners, hand scanner, flatbed scanner, web camera, game pad, digital camera.

Hard copy devices: Printer, impact printers, daisy wheel, dot matrix printer, line printer, chain printers, comb printers, non-impact printers, DeskJet, inkjet printers, laser printer, thermal transfer printer, barcode printers.

Computer Display: CRT, LCD, projection displays, plasma display panel, display standard, monochrome display adapter, HGA, CGA, EGA, VGA, MGA, SVGA, XGA, QVGA, SXGA, UXGA

Introduction to memory, classifications, random-access memory, volatile memory, non-volatile memory, flash memory, read-only memory, secondary memory, the cache memory, auxiliary storage memory, memory hierarchy, storage devise, magnetic tape, magnetic disk, floppy disk, hard disks, CD, DVD, magneto-optical.

Number system, binary, octal, hexadecimal, addition, subtraction, multiplications, computer code: BCD, ASCII, EBCDIC code, Excess-3 code, gray code, software, User interface, system software, programming software, application software logic gates and Boolean algebra representation and simplifications by kMap.

Computer Viruses: Introduction, history, types of computer viruses, classification of viruses ways to catch a computer virus, symptoms of a computer virus.

Application of computer: Desktop publishing, sports, design and manufacturing research and design, military, robotics, planning and management, marketing, medicine and health care, arts, communications, scientific, education.

Introduction of internet, history, IP, TCP and UDP, application protocol, world wide web, how the web works, web standards, website, overview, types of websites, electronic mail, internet, e-mail header, saved message file extension, messages and mailboxes, introduction to intranet, uses, advantages, disadvantages.

Introduction to data warehouse, components of a data warehouse, different methods of storing data in a data warehouse, advantages of using data warehouse

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

bca-103Data Structure

Definitions of Data Structure and Algorithm – Time and Space complexity- Algorithm notations.

Searching:(Linear and Binary), Concept of sorting, Sorting algorithms (Bubble Sort, quick sort, Selection Sort, merge sort). Recursion: Factorial, Fibonacci, Tower of Hanoi.

Linked Lists: Introduction to linked list and double linked list, Representation of linked lists in Memory, Traversing a linked list, Searching linked list, Insertion and deletion into linked list, Doubly linked lists, Traversing a doubly linked lists.

Stacks and Queues: Primitives of stacks, Implementation of stacks using Array & Link List Introduction to queues, properties of queues

Trees: Definition & Basic concepts, linked tree representation, Introduction to Binary Tree, Traversing Binary Trees (Pre order, Post order and In-order), Concept of Binary search tree, algorithm of Searching, inserting and deleting in binary search trees.

Graph: Introduction to graphs, types of graphs, operation of Graph: adjacency Matrix, Graph Traversal: Breadth first search, Depth first search.

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

bca-104Programming in C

Overview of C Language: Character set, C tokens, Identifiers, Keywords,Data types, Variables, Constants, Symbolic Constants , Operators in C, Hierarchy ofOperators, Expressions, Type Conversions and Library Functions.

Managing Input and Output Operation: Formatted and Unformatted I/O Functions,Decision making, branching and looping: Decision Making Statements - if Statement, if–else statement, nesting of if-else statements, else–if ladder, switch statement,?: operator

Looping - while, do-while, for loop, Nested loop, break, continue, and goto statements.Functions: Function Definition, prototyping, types of functions, passing arguments tofunctions, Nested Functions, Recursive functions.

Arrays: Declaring and Initializing, One Dimensional Arrays, Two Dimensional Arrays,Multi-Dimensional Arrays - Passing arrays to functions. Strings: Declaring andInitializing strings, Operations on strings, Arrays of strings, passing strings to functions.Storage Classes - Automatic, External, Static and Register Variables

Structures-Declaring and Initializing, Nested structure, Array of Structure, PassingStructures to functions, Unions, typedef, enum, Bit fields. Pointers – Declarations,Pointer arithmetic, Pointers and functions, Call by value, Call by reference, Pointers andArrays, Arrays of Pointers, Pointers and Structures. Meaning of static and dynamicmemory allocation, Memory allocation functions.

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

bca-105Financial Accounting Software

Fundamentals of Accounting - Accounting Terms   Accounting Assumptions, Concepts and Principles, Concepts, Principles, Types of Accounts, Double entry system for book keeping, Mode of accounting.

Journalising and Posting of Transaction – Recording of Business Transactions, Ledger, Trial Balance, Subsidiary Books & Control Accounts, Financial Statements.

Maintaining Chart of Accounts in Tally ERP 9 – Getting Started with Tally ERP 9, Company Creation, Company Features and Configurations, Chart of Accounts, Ledger, Group.

Fundamentals of Inventory Management – Creating Inventory Masters, Creation of Stock Group, Creation of Unit of Measure, Creation of Stock Item, Creation of Godown.
Recording Day to Day Transactions- Recording Transactions in Tally ERP 9, Accounting Vouchers, Inventory Vouchers.

Accounts Receivable and Payable Management
Maintaining Bill-wise Details, Activation of Maintaining Bill-wise Details Feature.
Banking Features - Setting up Banking Features, Cheque Management, Bank Reconciliation
Deposit Slip Payment Advice, Managing of Post-dated Cheques.

Allocation and Tracking of Expenses and Incomes- Cost Centre and Cost Categories
MIS Reports - Advantages of Management Information Systems, Types of MIS Reports in Tally ERP 9, MIS Reports in Tally.ERP 9.
Storage and Classification of Inventory- Godown Management, Activating Godown, Creating a Godown, Stock Category, Movements of Goods in Batches/Lots - Batch wise details, Stock Valuation Methods.

Management of Purchase and Sales Cycles - Purchase Order Processing, Sales Order Processing
Price Levels and Price Lists - Activating Price Lists and Defining of Price Levels, Creation of Price List, Using Price List, Revise Price List.

Manufacturing Process – Activating of Bill of Materials, Auto Listing of Components Using Bill of Materials, Accounting of Manufacturing Process in Tally ERP 9, Transferring of Manufactured Goods from Storehouse to Showroom

Goods and Services Tax – Introduction to GST, Getting Started with GST (Goods), Advance adjustments and Entries (Goods), Getting Started with GST (Services), Advance adjustments and Entries (Services).

Securing Financial Information – Security Control, Password Policy, Tally Vault Password
Data Management and Financial Year End Process- Backup and Restore , Export and Import of Data, Printing Reports, Managing of Data during Financial Year End Process, Important Pre-Split Activity, Splitting of Data

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

bca-106Multimedia Basics

Introduction to Multimedia Technology – Application areas of Multimedia, Media elements (text, audio, video, image and animation), MM hardware & software requirements(Image , Video, Audio, Sound editing software's). Developing Applications using multimedia, Images: Raster and Vector images. Image compression: Importance and its type (Lossy and Lossless Compression), advantages and disadvantages of image compression, Jpeg image compression standard, mpeg video compression (P,B, I frames).

Flash: Introduction, Features , Advantages ,Concepts of Frame Rate and Resolution, Exploring The Flash Interface ,The Flash stage ,Timeline- Play head/Frames/Key Frames/ Blank frames ,Menus, Tools of Flash (Pen, Pencil, Paint Bucket Tool, spray brush ,Text, 3D rotation, deco tool), Drawing object in flash (line, curve, oval, Rectangle , Polystar tool) , stroke and fill, Layers and its types in flash, Key frames, Object based animation, motion tween, classic tween and shape tween, adding sound.

Photoshop: Introduction, terms: layer, intensity, resolution, opacity, its features ,Opening and Importing images, Creating Documents with different sizes (default, international, custom), Editing images, Marquee, Move tool, Selection Tools: magic wand tool, quick selection tool, lasso tool: polygonal lasso tool, magnetic lasso tool ,Crop tool, slice tool, eyedropper tool, ruler tool: Brush tool: Spot healing brush tool, healing brush tool, patch tool, red eye tool, brush tool, Color: color replacement tool, Pen tool, Text tool: horizontal type tool, vertical type tool, Path selection tool, direct selection tool, invert selection Working with layers & layer styles, duplicate layer, merge layer, set layer visibility, group layers, Free Transformations, Perspective, Eraser tool, background eraser tool magic eraser, gradient tool paint bucket too, curve tools .