BCA (Bachelor of Computer Applications) (Semester System)

Syllabus for the Batch from Year 2023 To Year 2026

Class – BCA-III Semester

Pattern of Question Paper - Eight questions of equal marks (Specified in the syllabus), two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four).Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

BCA03001T:- Computer Architecture

Time: 3 Hours   **M. Marks: 100**

Credits L T P

3 1 0

Month wise Division	Syllabus Unitization
July - August	**SECTION–A** **Information Representation:** Register Transfer Language, Various Registers, Implementing Common Bus Using multiplexers Logical; Arithmetic & Shift Micro – operations. **Basic Computer Design** Instruction Codes, Computer Instructions, Timing Signals, Instruction Cycle, Design of a Basic Computer. **SECTION–B** **CPU Design:** General Register Organization, Stack Organized CPU, Instruction Formats, Addressing Modes, Program Control
September	**SECTION-B** Hardwired & Microprogrammed (Wilhe's Design) Control Unit, RISC and CISC Characteristics. **SECTION–C** **Memory Organization:** Memory Hierarchy, Designs & Concepts of Main Memory, Auxiliary Memory, Associative Memory, Cache and Virtual Memory. **SECTION–D** **I/O Organization:** I/O Interface, Modes of Transfer,
October-November	**SECTION–D** Program Interrupt, DMA & I/O Processor. **Pipeline & Vector Processing:** Introduction to Parallel Processing and Pipelining, SISD, SIMD & MISD, MIMD Machines.

Prescribed Book

Book Name – Computer Architecture

Author – Amit Sharma

Publisher – UNIMAX Publishers

BCA03002T: DATABASE MANAGEMENT SYSTEM

Time: 3 Hours   **M. Marks: 100**
Credits L T P
     3 1 0

Month wise Division	Syllabus Unitization
July - August	**SECTION–A** Introduction to Data, Field, Record, File, Database, Database management system. Structure of database system, Advantage and disadvantage, levels of database system, Relational model, hierarchical model, network model, comparison of these models, E–R diagram, different keys used in a relational system, SQL.
September	**SECTION–B** DBA, responsibilities of DBA, Relational form like INF, 2NF, 3NF, BCNF, 4th NF, 5th NF, DBTG, concurrency control and its management, protection, security, recovery of database. **SECTION–C** SQL: Introduction to SQL–DDL, DML, DCL, Join methods & sub query, Union Intersection, Minus, Built in Functions, Views, Security amongst users, Sequences, Indexing
October-November	**SECTION–C** Cursors–Implicit & Explicit, Functions & Packages Database Triggers. **SECTION–D** Big Data: Introduction to Big Data and Analytics, Introduction to NoSQL

Prescribed Book

Book Name – Database Management System

Author – Anshuman Sharma

Publisher – Lakhanpal Publishers

BCA03003T: INTRODUCTION TO PYTHON PROGRAMMING

Time: 3 Hours   M. Marks: 100

Credits L T P

   3 1 0

Month wise Division	Syllabus Unitization
July - August	**SECTION–A** **Introduction to Python**: Python's Technical Strengths, Execution Model, Process of Computational Problem Solving, Different ways to run Python Programs. **Data and Expressions**: Literals, Variables and Identifiers, Operators, Expressions, Strings, Statements and Data Types, Boolean Expressions (Conditions), Logical Operators, Selection Control, Nested conditions, **Debugging Lists & Dictionaries**: List Structures, Lists (Sequences) in Python, Iterating Over Lists (Sequences) in Python, Dictionaries and Files, Looping and dictionaries, Advanced text parsing
September	**SECTION–B** **Control Structures**: Conditional blocks using if, else and elif, While statement, Definite loops using For, Loop Patterns, **Functions, Packages and Modules**: Fundamental Concepts, Program Routines, Flow of Execution, Parameters &Arguments, Recursive Functions, Recursive Problem Solving, Iteration vs. Recursion, Understanding Packages, Modules, Top-Down Design, Python Modules Importing own module as well as external modules and packages. **SECTION–C** **Objects and Their Use:** Introduction to Object Oriented Programming, Concept of class, object and instances, Constructor, class attributes and destructors, Real time use of class in live projects, Inheritance, overlapping and overloading operators, Adding and retrieving dynamic attributes of classes, Programming using Oops support
October-November	**SECTION–C** **Files:** Opening Files, Using Text Files, Reading files, Writing files, Understanding read functions, read(), readline() and readlines(), Understanding write functions, write() and writelines(), Manipulating file pointer using seek, String Processing, Exception Handling **SECTION–D** Using Databases and SQL: Database Concepts, SQL basic summary, SQL Database connection using python, creating and searching tables, Programming using database connections, Basic Data modelling, Programming with multiple tables

Prescribed Book

Book Name – Computational Problem Solving Using Python

Author – Sushil Bhardwaj

Publisher – Kalyani Publishers

Subject 4: Multimedia Technology and Applications

M. Marks: 100   **Time: 3 Hours**

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Course Outcome: • To provide various concepts of multimedia and its applications • To understand the basic concepts of Multimedia Systems • To learn representations, perceptions and applications of Multimedia • To understand the technologies behind multimedia applications

Month wise Division	Syllabus Unitization
July - August	**SECTION–A** Introduction: Multimedia, history of Multimedia, components, uses of multimedia. Multimedia market, resources for multimedia developers, types of products. Hardware and software, multimedia computer architecture. Overview of Multimedia application softwares (e.g. Adobe Photoshop, Audacity, Final Cut Pro, WordPress, Blender) Text: Elements of Text, Text data files, using text in Multimedia applications, font editing & design tools, Hypermedia & Hypertext
September	**SECTION–B** Images: Still Images – Bitmaps, Vector Drawing, 3D Drawing & rendering, Natural Light & Colours, Computerized Colours, Colour Palletes, Image File Formats Graphics: Elements of graphics, images and colour, graphics file and application formats, obtaining images for multimedia use, using graphics in multimedia applications **SECTION–C** Sound: Digital Audio, MIDI Audio, MIDI vs Digital Audio, Audio File Formats. Video: How Video Works, Analog Video, Digital Video, Video File Formats, Video Shooting and Editing
October-November	**SECTION–D** Animation: Principle of Animations. Animation Techniques, Animation File Formats Making Multimedia: Stages of a multimedia project, requirements to make good multimedia, Multimedia Hardware, Macintosh and Windows production Platforms, Hardware peripherals, Connections, Memory and storage devices, Multimedia software and Authoring tools.

	Credits
	L T P
BCA03004L (Programming Lab-I)	**0 0 2**

Lab – I: Based on Python Programming Language : 50 Marks

	Credits
	L T P
BCA03005L: (Programming Lab-II)	**0 0 2**

Lab – II: Practical in Oracle : 50 Marks