(BCA) Bachelor of Computer Applications

Batch from Year 2022 To Year 2025

BCA V 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.

Paper – I: Software Engineering

Time: 3 Hours M. Marks: 75

Month wise Division	Syllabus Unitization
July - August	**SECTION–A** Introduction to Software: Definition, Software characteristics, Software components, Software Applications. Introduction to Software Engineering: Definition, Software Engineering Paradigms, waterfall method, prototyping, interactive Enhancement, The Spiral model, Fourth Generation Technique. Software Metrics: Role of Metrics and measurement, Metrics for software productivity and quality, Measurement software, size–oriented metrics, function oriented metrics, Metrics for software quality.
September	**SECTION–B** Software Requirement Specification (SRS): Problem analysis, structuring information, Data flow diagram and data dictionary, structured analysis, Characteristics and component of (SRS). Planning a Software Project: Cost estimation, uncertainties in cost estimation, Single variable model, COCOMO model, On software size estimation, Project scheduling and milestones, Software & Personal Planning, Rayleigh curve, Personal Plan, Quality Assurance Plan, Verification & Validation (V & V), inspection & review. System Design: Design Objectives, Design Principles, problem, Partitioning, Abstraction, Top Down and Bottom–up techniques.
October-November	**SECTION–C** Coding: Coding by Top–down and Bottom–up, Structured Programming, Information Hiding, Programming style, Internal Documentation. Testing: Level of testing, Test cases and test criteria, Functional Testing, Structural Testing. **SECTION–D** System Maintenance: Types of Maintenance, Corrective and Preventive Maintenance.

Prescribed Book

Book Name – Integrated Approach to Software Engineering

Author – Pankaj Jalote

Publisher – P.cbs Publishers

Paper II - WEB TECHNOLOGIES

Time: 3 Hrs. M. Marks: 75

Month wise Division	Syllabus Unitization
July - August	**SECTION–A** Introduction to websites, Static vs dynamic websites, server side and client side scripting HTML 5 : Introduction , Structure of a web page , HTML Elements, HTML attributes, Basic Text Formatting tags, Comments, Links, Lists, Image, Style, Forms, Table, Media, Classes, iframes. CSS3 : Introduction , stylesheets , selectors , styling – backgrounds, texts , fonts , links , lists , tables , Box model JAVASCRIPT: Introduction, datatypes, variables, comments ,Operators, functions and events, basics of JQuery and AJAX
September	**SECTION–B** Introduction to PHP, basics, Data types, variables, comments, control statements, functions, PHP with web design, working with files, uploading a file, sessions, cookies, error handling , database connectivity with mysql **SECTION–C** HOSTING : Overview of Domain , Hosting , SSL Certificates and steps to host a website online. Introduction to Emerging Web Technologies: Introduction to Chatbot, Artificial Intelligence and Machine Learning basics used in websites.
October-November	**SECTION–D** EMERGING WEB TECHNOLOGIES: Basics of Internet Of Things (IOT) used in Websites, Basics of Block Chain Technology in Websites, Augmented Reality and Virtual Reality and Basics of Single page applications websites using Angular.

Prescribed Book

Book Name – Web Technologies

Author – Balram Singh Yadav

Publisher – ABS Publications

Paper – III: OPERATING SYSTEM
Time: 3 Hrs. M. Marks: 75

Month wise Division	Syllabus Unitization
July - August	**SECTION–A** I**ntroduction**: Definition, Early Systems, Simple Batch system, Multi programmed Batch. Time Sharing Systems, Personal Computer System, Parallel Systems, Distributed Systems, Real–time Systems. **Processes:** Process concepts, Process Scheduling, Threads. CPU–Scheduling: Basic concepts, Scheduling Criteria, Scheduling Algorithms, Algorithm Evaluation.
September	**SECTION–B** **Process Synchronization**: Critical – section problem, semaphores, classical problem of synchronization. **Memory Management**: Background, Logical v/s Physical address space, swapping, continuous allocation, paging, segmentation. **Section C** **Virtual Memory**: Background, demand paging, performance of demand paging, page replacement, page replacement algorithms, thrashing.
October-November	**SECTION–C** **Secondary Storage Structures**: Disk structures, Disk scheduling, Disk Reliability. **SECTION–D** Deadlocks: System Model, Deadlock characterization, methods for handing deadlocks, Deadlocks Prevention, Deadlock avoidance, Deadlock detection, Recovery from deadlock, combined approach to deadlock handling.

Prescribed Book

Book Name – Introduction to Operating Systems

Author – Charanjit Singh

Publisher – Kalyani Publishers

Paper -IV JAVA Programming Language

Time: 3 Hrs. M. Marks: 75

Month wise Division	Syllabus Unitization
July – August	**SECTION–A** **JAVA BASICS:** Introduction to Java, Features of Java, Structure of a Java Program, primitive data types, keywords, Identifiers, literals, operators and comments. **OOPS:** Object Oriented concepts Advantage of OOPs, Objects and Classes **Strings:** Declaring a string, Immutable string, string comparison, concatenation, substring, string tokenizer. **SECTION–B** **Inheritance:** what is inheritance, types of inheritance, static import, Method overloading, method overriding, Runtime polymorphism, super keyword, final keyword
September	**SECTION–B** **Interfaces:** Abstract classes, declaring an interface, relationship between classes and interface, interface inheritance, implementing multiple inheritance using interface **Packages:** what are packages, advantages of using packages, accessing package from another package, subpackaging, running packages by setting path and classpath. **SECTION–C** **Exception Handling:** what is exception handling, checked and unchecked exceptions, try-catch, try-multiple catch, try – finally, throw and throws **Multithreading:** What is a thread, life cycle of a thread, creating a thread ,sleeping a thread , joining a thread , thread priority.
October-November	**SECTION–D** **Input /output:** File input stream, File output stream, Buffered out put stream ,Buffered input stream . **Database connectivity**: JDBC , JDBC drivers, steps to connect to the database, connectivity with Mys

Prescribed Book

Book Name – Java Programming

Author – Anshuman Sharma

Publisher –Lakhanpal Publications

Semester-V

Paper–V

Time: 3 Hours **Marks: 50**

Lab : **Lab based on JAVA Programming Language**

Paper–VI

Time: 3 Hours **Marks: 50**

Lab based on Website Designing using HTML, JAVA Script and PHP