

## BCA – 501: Introduction to Java

**Level of Knowledge:** Expert Knowledge

**Course Objective:** The objective of this course is to familiarize the concept of basics of Java

**Scheme of Examination**

**Total marks 100.**

**Internal marks 20.**

**Practical Marks 20**

**External Marks 60**

The question paper will contain questions equally distributed in all units. The papers may contain the combination of Numerical/Objective/ Conceptual /Analytical/ Theoretical in each question.

### Course Contents

#### Unit 1:

**Primitive data types:** integer, Short, long, byte, float, double, Unicode Character set, Boolean, their ranges, defaults initial values, wrapping of integer arithmetic, casting comments, identifiers and reserved words, local variables, operators and operator precedence.

#### Unit 2:

**Statements:** simple and compound, Uses of control do, for, while, switch, break, case of continue, label. Class type Data, String, Arrays.

#### Unit 3:

Definitions and Naming Conventions for the members of the Java Classes, Instance fields and methods, Initialization by Constructor, Initialization by Default Constructor, Multiple Definition of Constructors, Creation of objects, access methods.

#### Unit 4:

Inheritance, Super class, Subclass, Method overloading, Interface, Thread, Multithreading example, Synchronized, Exception (try-catch-final blocks examples).

#### Unit 5:

Java Virtual Machine concept, Java Platform overview. Programming Examples to clarify use of objects, threads, exceptions and packages for I/O, file and string handling.

### Text Readings:

1. SchildtsHerbert: **The Complete Reference Java 2**, Tata Mcgraw Hill, New Delhi, 4<sup>th</sup> edition, 2001.
2. Jaworski Jamie: **Unleashed Java 2**, Techmedia SAMS Publications, New Delhi, 1999.
3. Joseph O'Neil, **Teach yourself Java**, Tata McGraw Hill, New Delhi, 2001.
4. Balagurusamy E, **Programming with Java**, Tata McGraw Hill, New Delhi, 2<sup>nd</sup> edition, 2002.
5. Gosselin Don, **Java Script : Comprehensive**, Australia, Thompson Learning, 2001.

## **List of Suggested Practicals**

1. Exercises related to use of Primitive data types – integer. Short, long, byte, float, double, Unicode character set, Boolean, their ranges, defaults initial values, wrapping of integer arithmetic, casting.
2. Exercises related to use of Comments, Identifiers and reserved words, local variables, operators and operator – precedence.
3. Exercises related to use of statement simple and compound, Uses of control do, for, while, switch, break, case of continue, label.
4. Exercises related to use class type Data : String, Arrays, Object Arrays, Examples of use of class type data.
5. Exercise related to use of instance fields and methods, Static Fields and methods, Exercises related to use of Initialization by Constructor, Initialization by Default constructor.
6. Exercise related to use of Creation of objects, access method.
7. Exercise related to use of Inheritance, Super class, Subclass, Method overloading.
8. Exercise related to use of interface.
9. Exercise related to use of thread, multithreading examples, synchronized.
10. Exercise related to use of Exception (try-catch-final blocks examples.)
11. Java Programming Exercises.

## **BCA-502: Computer Organization & Architecture**

**Level of Knowledge:** Expert Knowledge

**Course Objective:** The objective of this course is to familiarize the students with concept of Computer Organization & Architecture.

**Scheme of Examination**

**Total marks 100.**

**Internal marks 40.**

**External marks 60.**

The question paper will contain questions equally distributed in all units. The papers may contain the combination of Numerical/Objective/ Conceptual /Analytical/ Theoretical in each question.

### **Course Contents**

#### **Unit 1.**

**Introduction to Organization and Architecture:** Structure and Function. A Brief History of Computers, Their Designing for Performance, Pentium and Power PC Evolution, Computer Components, Computer Functions ,Interconnection Structure, Bus Interconnections ,PCI , Future bust.

#### **Unit 2**

Computer Memory System, Semiconductor Main Memory, Cache Memory, Advance DRAM Organization, Magnetic Disk, RAID, Optical Memory, Magnetic Tap.

#### **Unit 3**

Machine Instruction Characteristics, Type of Operations, Assembly Language, Addressing, Instruction Formats.

CPU Structure & Function: Process Organization, Register Organization, The Instruction Cycle, Instruction Pipelining, The Pentium Processor, The Power PC Processor

#### **Unit 4**

Micro Operations, Control of CPU, Hardwired Implementations, Basic Concepts of Micro programmed Control, Microinstruction Sequencing, Microinstruction Execution, Applications of Micro Programming

#### **Unit 5**

External Devices, I/O Modules, Programmed I/O, Interrupt-Driven I/O, Direct Memory Access, I/O Channels And Processors, External Interface, The MESI Protocol Vector Computation, Parallel Processors.

### **Text Readings:**

1. William Stallings: **Computer Organization & Architecture**, PHI Fifth Edition 1999.
2. Hayes: **Computer Organization & Architecture**, Tata McGraw Hill

## **BCA: 503 Software Engineering**

**Level of Knowledge:** Expert Knowledge

**Course Objective** To introduce with the concept of system analysis and software engineering.

**Scheme of Examination**

**Total marks 100.**

**Internal marks 40.**

**External marks 60.**

The question paper will contain questions equally distributed in all units. The papers may contain the combination of Numerical/Objective/ Conceptual /Analytical/ Theoretical in each question.

### **Course Contents**

#### **Unit 1**

General business environment, business system concept, system analysis, System Development Life Cycle.

#### **Unit 2**

Project selection: source of project request, managing Project review & selection, preliminary investigation, system requirement specification & analysis: Fact finding techniques, feasibility study, cost & benefit analysis.

#### **Unit 3**

Structured system analysis, tools of structured analysis, software design fundamentals, data flow, oriented design, and object oriented design & data oriented design method.

#### **Unit 4**

Software Quality Assurance, Software testing techniques, Software testing Fundamentals, White Box Testing ( Basis Path Testing, Control Structured testing), Black Box Testing, Software Testing Strategies : - A Strategic approach to software testing , Strategic issue unit testing, integration testing, Validation testing, System Testing, The art of Debugging.

#### **Unit 5**

System Implementation & Software Maintenance, Hardware & Software Selection.

### **Text Readings:**

1. Awad Elias M: **System Analysis & Design**, Galgotia Pub. New Delhi, 1997.
2. Pressman Roger S., **Software Engineering**, Mc-graw Hill ,New York, 1997.
3. Jalote Pankaj:an, **Integrated approach to software engineering**, Nakoda publication house

## BCA - 504: Discrete Mathematics & Linear Algebra

**Level of Knowledge:** Expert Knowledge

**Course Objective:** The objective of this course is to familiarize the students with concept and applications Discrete Mathematics & Linear Algebra

**Scheme of Examination**

**Total marks 100.**

**Internal marks 40.**

**External marks 60.**

The question paper will contain questions equally distributed in all units. The papers may contain the combination of Numerical/Objective/ Conceptual /Analytical/ Theoretical in each question.

### Course Contents

#### Unit 1

**Algebra of Logic:**

Recall of Statements & Logical Connectives, Tautologies & Contradictions, Logical Equivalence, Algebra of Propositions, Quantifiers, Universal & Existential Quantifiers.

**Boolean Algebra:**

Boolean Algebra and its Properties, Algebra of Propositions, De-Morgan's Laws, Algebra of Electric Circuits & Its Application, Design of Simple Automatic Control System.

#### Unit 2

**Boolean Function Of Fundamental Forms:** Boolean Function – Disjunction and Conjunction Normal Forms, Bool's Expansion Theorem – Fundamental Forms, Many Terminal Networks, Trees and Binomial Networks.

#### Unit 3

**Basic Concepts:**

**Sets:** Union, Intersection, Difference, Complement, De- Morgan's Laws & Cartesian Product).

**Mappings:** Type of Mappings, Identify & Inverse mappings, Product of Mappings).

**Groups:** Definition, Order of an Element.

**Subgroups:** Definition, Necessary and Sufficient condition.

**Coset Decomposition:** Right & Left Cosets, Lagrange's Theorem.

**Definitions And Basics Of:** Normal Subgroup, Quotient Group, Homomorphism & Isomorphism of groups, Kernel of Homomorphism, Ring and Field.

#### Unit 4

**Vector Spaces:** Vector Space, Subspaces and Quotient Spaces. Linearly Dependent and Independent Vectors.

**Linear Maps:** Definition & properties. Homomorphism & Isomorphism of Vector Spaces, Kernel of A Linear Map.

#### Unit 5

Matrix Representation of A Linear Map, rank and Nullity Of Linear Map. Fundamental Theorem of Vector Space Homomorphism, Eigen Values and Eigen Vector of Linear Map and Matrix, Cayley Hamilton Theorem: Proof & Applications.

**Text Readings:**

1. Agrawal D.C. : **Discrete Mathematics & Linear Algebra**, Shree Sai Prakashan, Meerut  
2<sup>nd</sup> Edition
2. Pathak H.K and Agrawal D.C: **A text Book of Discrete Mathematics**, Shiksha  
sahitya Prakashan, Meerut.
3. Pathak H.K and Agrawal D.C : **A text Book of Linear Algebra** Shiksha sahitya  
Prakashan, Meerut..
4. Goel S. N. :**Linear Algebra**, Kedarnath Ramnath Publications, Meerut.
5. Hoffman Kenneth and Kunze Ray: **Linear Algebra** , Prentice hall of India Pvt. Ltd.  
New Delhi.

## **BCA-505: Web Designing and Web Technology**

**Level of Knowledge:** Expert Knowledge

**Course Objective:** The objective of this course is to familiarize the students with web designing and web technology.

**Scheme of Examination**

**Total marks 100.**

**Internal marks 20.**

**Practical Marks 20**

**External Marks 60**

The question paper will contain questions equally distributed in all units. The papers may contain the combination of Numerical/Objective/ Conceptual /Analytical/ Theoretical in each question.

### **Unit 1**

Client server Computing Concepts, Distributed computing on the Internet, Introduction to web pages and HTML, HTML elements and tags, formatting text and pages, including pictures in a page, creating tables and lists, splitting pages into frames.

### **Unit 2**

Site design and Navigation : The Home page Navigational tools, Formatting the body section – using block level, using text level, using font style, using phrase elements.

### **Unit 3**

Multimedia with Web: Creating files, Streaming audio, streaming animations, Java Script and Browser, Java Script and server, Embedding Java Script and HTML, javascript fundamentals – Variables, value store house, statements, loops, condition and functions, objects properties and methods, event handlers and non-script tag.

### **Unit 4**

Comparison of HTML, DHTML and XML web casting, Domain name selection, web server selection, Web hosting, uploading and downloading of web, incremental uploading of data, introduction to SQL-Server, Introduction to User management in SQL – Server.

### **Unit 5**

Introduction to ASP, database handling with ASP, Connection object, record set object, request object, response object, Cookies, creating tables and insert query through connection.

### **Text Readings:**

1. **:Mastering ASP programming:**BPB Publication
2. Bayrous Ivan:**JavaScript,HTML,DHTML**, Vikas Publication
3. Gosselin Don, Thomson: **JavaScript**, Vikas Publication.
4. Sklar Joel, Thomson:**Principles of Web Design**, Vikas Publication.
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## **List of Suggested Practicals**

1. Exercise related to use of HTML elements and text
2. Html programming exercises
3. Java script programming exercises
4. Design and Develop a table in SQL Server.

## BCA-506: Entrepreneurship

**Level of Knowledge:** Expert Knowledge

**Course Objective:** The objective of this course is to aware the students with Business Entrepreneurship.

**Scheme of Examination**

**Total marks 100.**

**Internal marks 40**

**External Marks 60**

The question paper will contain questions equally distributed in all units. The papers may contain the combination of Numerical/Objective/ Conceptual /Analytical/ Theoretical in each question.

### Unit 1

**Eco. Development & Entrepreneurship:** concept, social context, psychological factors in entrepreneurship Characteristics, qualities & pre-requisite of entrepreneurship. Environmental factors affecting entrepreneurship.

### Unit 2

Institutional finance & entrepreneurship, Mobility of entrepreneurs. Different aspects of entrepreneurship Org. & performance of entrepreneurship skills, effectiveness of entrepreneurship, new entrepreneurship, economic and sociological view-points.

### Unit 3

**Self Employment:** need & mode, Methods & procedure to start & expand one's own business: Relation between large & small enterprises developing ancillary units for quality production & cost effectiveness.

### Unit 4

**Preparation of new project** -Demand, analysis & market potential, Capital saving & project costing, working capital requirement. Calculation of Break Even Point, Profit making in perspective.

### Unit 5

**Main coverage of project proposal**-Technical, Commercial & economic. Financial & Managerial Feasibility, Proforma on cost of Production & Profitability. entrepreneurship before independence and entrepreneurship growth after independence under planning system. Role of marwari community in Industrial entrepreneurship.

### Text Readings:

1. Banga: **Project Planning and Entrepreneurship**
2. Paul jose: **Entrepreneurship development** , Himalaya