

## BACHELOR OF COMPUTER APPLICATION [BCA] - II [ 60 + 40 PATTERN ]

W.E.F. 2015-16

<b>Second Year BCA – ( Semester III &amp; IV ) w.e.f. 2015-16</b>			
<b>Paper</b>	<b>Semester-III</b>	<b>Paper</b>	<b>Semester-IV</b>
BCA31	Mathematics and Statistics for Managers	BCA41	C# .Net
BCA32	Computer Animation Using Flash	BCA42	Stock And Commodity Market
BCA33	Career Management & Counseling	BCA43	Data Structure
BCA34	Java Programming	BCA44	Cyber Crime and Security
BCA35	Practical on Computer Animation	BCA45	Practical on Transaction related to Stock And Commodity
BCA36	Practical on Java	BCA46	Practical on Data Structure using C++
BCA37	Practical on Tally ERP	BCA47	Practical on C# .Net



# North Maharashtra University, Jalgaon

(NACC Re-accredited 'A' Grade University)

## FACULTY OF COMMERCE & MANAGEMENT

### B.C.A. II Year - Semester III

### BCA – 31 Mathematics and Statistics for Managers

60 + 40 Pattern: External Marks 60 + Internal Marks 40 = Maximum Total Marks: 100

[ Total Lectures: 48 ]

**Objective :** To impart the required knowledge of Mathematics and statistics for managerial activities among students.

#### 1 : Mathematical Logic

Lectures 8

- 1.1. Meaning of Statement
- 1.2. Primitive and Compound Statements
- 1.3. Truth Values of a Statement
- 1.4. Law of Excluded Middle
- 1.5. Logical Operations: Negation, Conjunction & Disjunction Implication, Double Implication, Equivalence
- 1.6. Equivalence of Logical Statements
- 1.7. Truth Tables & Construction of Truth Tables
- 1.8. Tautology and Contradiction
- 1.9. Argument: Valid And Invalid Arguments

#### 2 : Sets

Lectures 8

- 2.1. Meaning of a Set
- 2.2. Methods of Describing a Set
  - 2.2.1. Tabular Form
  - 2.2.2. Set Builder Form
- 2.3. Types of a Set:
  - 2.3.1. Finite Set, Infinite Set, Empty Set, Subset, Universal Set,
  - 2.3.2. Equal Sets, Overlapping Sets, Disjoint Sets, Complementary Set.
- 2.4. Operations on Sets
  - 2.4.1. Union of Sets
  - 2.4.2. Intersection of Sets
  - 2.4.3. Difference of Sets
- 2.5. Demorgan's Laws (Without Proof)
- 2.6. Venn Diagrams
- 2.7. Cartesian Product of Two Sets
- 2.8. Statement of Following Laws (Without Proof) Relating To Union and Intersection of Sets :- Idempotent Laws (ii) Identity Laws (iii) Commutative Laws (iv) Associative Laws (v) Distributive Laws

### **3 : Matrices**

**Lectures 8**

- 3.1. Meaning of a Matrix, Order Of Matrix
- 3.2. Types of Matrix
  - 3.2.1. Zero Matrix, Column Matrix, Square Matrix, Diagonal Matrix,
  - 3.2.2. Scalar Matrix, Unit Matrix
  - 3.2.3. Symmetric Matrix, Skew-Symmetric Matrix,
  - 3.2.4. Transpose of a Matrix: Singular Matrix & Non-Singular Matrix.
- 3.3. Algebra of Matrices:-
  - 3.3.1. Equality of Matrices
  - 3.3.2. Multiplication of Matrix by A Scalar
  - 3.3.3. Addition of Matrices, Subtraction of Matrices
  - 3.3.4. Multiplication of Matrices

### **4 : Introduction to Statistics**

**Lectures 8**

- 4.1. Meaning of Statistics
- 4.2. Importance and Limitations of statistics
- 4.3. Meaning of data, Raw data, Primary data, Secondary data
- 4.4. Variable and attribute, Types of variable: - districts and continuous
- 4.5. Meaning of Population and sample
- 4.6. Introduction to methods of sampling: - simple random sampling and stratified random sampling

### **5 : Measures of central tendency**

**Lectures 8**

- 5.1 Meaning and central tendency
- 5.2 Statement of measures of central tendency: - arithmetic mean, geometric mean, harmonic mean, median and mode
- 5.3 Computation of these measures of central tendency for given raw data
- 5.4 Partition values: - quartiles, deciles and percentiles
- 5.5 Computation of partition values for given raw data
- 5.6 Numerical examples and problems from real life situations

### **6 : Mathematical and Statistical Calculations using MS-EXCEL**

**Lectures 8**

- 6.1 Step by step procedure to perform basic logical function using MS Excel
- 6.2 Step by step procedure to perform basic mathematical function using MS Excel
- 6.3 Step by step procedure to perform basic statistical function using MS Excel

### **Reference books –**

- 1. Business Mathematics Sancheti & Kapoor Sultan Chand & Co. New Delhi
- 2. Business Mathematics & Analytics Anand Sharma Himalaya Publishing
- 3. Business Mathematics Dr.Ramnath Dixit and Dr.Jinendra Jain Himalaya Publishing
- 4. Business Mathematics & Statistics: Punaini, Pearson Education
- 5. Business Statistics C M Chikkodi & B G Satyaprasad Himalaya Publishing
- 6. Business Statistics S P Gupta Sultan Chand & Co. New Delhi



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## FACULTY OF COMMERCE & MANAGEMENT

### B.C.A. II Year - Semester III BCA – 32 Computer Animation Using Flash

60 + 40 Pattern: External Marks 60 + Internal Marks 40 = Maximum Total Marks: 100

[ Total Lectures: 48 ]

**Objective :** To make students well familiar with skill of creating computer Animation

#### 1. Introduction to Animation

Lectures 8

- 1.1. Animation –Concept, History
- 1.2. Use of Animation in Today's Industry.
- 1.3. Using Animation Best Practices.
- 1.4. Principles of Animation.
- 1.5. Types of Animation and Animation Techniques: Classical Animation, Stop Animation, Clay Motion, Frame Animation. Cell Animation
- 1.6. Components used for designing animation such as Light Box.
- 1.7. Concept of 2D and 3D Animation, Difference 2D and 3D Animation

#### 2. Introduction Flash Using CS3

Lectures 8

- 2.1. Introduction to Flash CS3
- 2.2. Area of Application Flash CS3
- 2.3. Tools of Flash CS3
- 2.4. Working with Panels : Property Panel, Color Panel, Library Panel
- 2.5. Working with Filter : Drop Shadow, Blur, Glow, Bevel.
- 2.6. Adding and Formatting Static Text Tool.
- 2.7. Working with different Graphics Format.
- 2.8. Identifying the Development Cycle.

#### 3. Creating Animation

Lectures 8

- 3.1. Working with Timeline.
- 3.2. Using Frames, Key Frames, and Blank Key Frames.
- 3.3. Creating Motion Tween and Shape Tween.
- 3.4. Understanding Vector Graphics
- 3.5. Understanding Inverse Kinematics.
- 3.6. Publishing Files.

#### **4. Working with Symbols**

**Lectures 8**

- 4.1. Introduction to Symbol.
- 4.2. Types of Symbol : Graphics Symbol, Button Symbol and Movie Clip Symbol.

#### **5. Working with Layers**

**Lectures 8**

- 5.1. Introduction to Layers.
- 5.2. Layer Properties and Use : Lock/Unlock, Hide/Show, Rename, Outline Color
- 5.3. Types of Layers : Normal Layer, Guide Layer, Mask Layer

#### **6. Introduction to Action Script**

**Lectures 8**

- 6.1. Introduction to Action Panel : Action Tool Box, Script Navigator, Script Writing Interface.
- 6.2. Different Uses of Action Script: Controlling Frame, Controlling Button Symbol and Movie Clip Symbol.
- 6.3. Versions of Action Script : 1.0, 2.0, 3.0

#### **Reference Books -**

- Flash MS Bible (By BPB Publisher).
- Flash 8 – Straight to Point, Author – Dinesh Maidasani (Firewall Media Publisher)
- Macromedia Flash 8 : A Tutorial Guide, Author – Jay Armstrong, Jen deHaan (By BPB Publisher).
- Statistical Quality Control, E.L.Grant and R.S.Leavenworth, 6<sup>th</sup> Edition, McGraw Hill publisher.
- Principles of Quality Control, Jerry Banks, Wiley Publishers.



# North Maharashtra University, Jalgaon

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## FACULTY OF COMMERCE & MANAGEMENT

### B.C.A. II Year - Semester III BCA 33 Career Management & Counseling

60 + 40 Pattern: External Marks 60 + Internal Marks 40 = Maximum Total Marks: 100

[ Total Lectures: 48 ]

**Objectives:** To educate students regarding various career avenues.

- 1) Introduction to Career Management 8
  - a. Career and Education
  - b. Vocation, Job, Occupation, Profession, Trade Business
  - c. Goal Setting
  - d. SWOT Analysis
  - e. Career in Commerce and Management after graduation with respect to different specialization
- 2) Getting employed & being entrepreneur as Career 8
  - a. Getting employed – Meaning, Advantages and Limitations
  - b. Job Requirements – Employability requirements Knowledge, Skill
  - c. Entrepreneurship – Meaning, Advantages and Limitations
  - d. Willingness to – work, learn, accept and adjust
- 3) Career Growth – Local to Global 8
  - a. Introduction to Career Growth
  - b. Earning and Learning
  - c. Importance of Aptitude and Attitude in Career
  - d. Self Study – a tool to enrich the career
  - e. Career out of hobbies and Sport
  - f. Knowing foreign languages – an emerging career option
- 4) Introduction to Counselling 8
  - a. Meaning of Counselling
  - b. Importance of Counselling
  - c. Process of Counselling – Ventilation and Listening
  - d. Effects of Counselling
  - e. Counselling as Career
- 5) Work Life Balance 8
  - a. Role of Money in Career
  - b. Health and Career
  - c. Family Life and Career
  - d. Social Life and Career
- 6) Human Development and Career 8
  - a. Importance of Human Development
  - b. IQ, EQ, SQ, Social Quotient and Spiritual Quotient
  - c. Self Sufficiency – self reliance and career
  - d. Balanced Mind and Spiritual Growth

## **Reference books:**

- 1] Go Put Your Strengths to Work: 6 Powerful Steps to Achieve Outstanding Performance by Marcus Buckingham
- 2] The Soul of Leadership: Unlocking Your Potential for Greatness by Deepak Chopra
- 3] The Extreme Future: The Top Trends That Will Reshape the World in the Next 20 Years by James Canton
- 4] Emotional Intelligence: Why It Can Matter More Than IQ by Daniel Goleman
- 5] Entrepreneurial Genius: The Power of Passion by Gene N. Landrum Ph.D
- 6] Basic Counselling Skills: A Helper's Manual Hardcover – November 18, 2002  
by Richard Nelson-Jones (Author)



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## FACULTY OF COMMERCE & MANAGEMENT

### B.C.A. II Year - Semester III BCA – 34 Java Programming

60 + 40 Pattern: External Marks 60 + Internal Marks 40 = Maximum Total Marks: 100

[ Total Lectures: 48 ]

**Objective :** To impart the knowledge of object oriented programming using java among student.

#### 1 : Introduction

Lectures 8

Java as programming tool, Advantages of Java (Simple, Object Oriented, Distributed, Robust, Secure, Architecture Neutral, Portable, Interpreted, High performance, Multithreading, dynamic), Java & Internet

#### 2 : Fundamentals Programming Structures in Java

Lectures 8

Comments, Data types (Integer, floating pt., character type, Boolean, enumerated), Casting, Variables, Arrays, Assignments, Initializations (Conversion between Numeric Types, constants), Operators, Input and Output, a simple java programs, Compiling and running Java programs using command line and Editors, command line arguments. **Control flows:** conditional statement, loops, Switch statement, and Block scope

#### 3 : Objects and Classes

Lectures 8

Introduction, Defining a class, Adding variables, Adding methods, Creating objects, Accessing class members, Constructors, Method Overloading, Static members, Nesting of methods

#### 4 : Function and Package

Lectures 8

String functions (Concatenation, substring, string editing, testing for equality), Formatting functions, Package, User defined package

#### 5 : Inheritance

Lectures 8

Inheritance, Inheritance hierarchies, super class, sub class, Polymorphism, Abstract classes, Access modifiers, Wrapper classes, Interfaces, Inner classes

#### 6 : Exception Handling

Lectures 8

Dealing with errors (The classification of exception, How to throw the exception) catching exceptions

#### Reference Books -

1. Core Java Volume- I Fundamentals- By : Cay's Horstmann and Gray Cornell.
2. Programming with Java- By : E Balagurusamy (Tata McGraw Hill)
3. The complete reference JAVA-2 Fifth Edition By: Herbert Schildt(TMh)





## North Maharashtra University, Jalgaon

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### FACULTY OF COMMERCE & MANAGEMENT

#### **B.C.A. II Year - Semester III** **BCA – 35 Practical on Computer Animation**

60 + 40 Pattern: External Marks 60 + Internal Marks 40 = Maximum Total Marks: 100

*[ Total Practical's: 14 ]*

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**Objective :** To practically train students in creating animations using flash.

1. Drawing a house with a pencil.
2. Demonstrate different static text formats using Filters.
3. Creating E-Cards of Birthday Wishes.
4. Creating Advertisements for Websites.
5. Creating Animated Visiting Cards.
6. Creating Animation Facial Expression with the help of Smiley.
7. Demonstrate Bouncing Ball Animation using Motion Tween.
8. Demonstrate Car Racing Game.
9. Demonstrate Pool Game.
10. Demonstrating Blooming Flower Animation using Frame-by-Frame.
11. Demonstrating motion of animal walking or running.
12. Demonstrate a digital animation of Fish Aquarium.
13. Create a digital animation presentation based on topic "Save Girl".
14. Demonstrate action script for button to control sound.



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### FACULTY OF COMMERCE & MANAGEMENT

**B.C.A. II Year - Semester III**

**BCA – 36 Practical on Java**

60 + 40 Pattern: External Marks 60 + Internal Marks 40 = Maximum Total Marks: 100

*[Total Practical's: 11 ]*

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**Objective :** To practically train students in computer programming using java.

1. Write a Java program to demonstrate use of Array.
2. Write a Java program to implement command line argument.
3. Write a Java program to generate Fibonacci series.
4. Write a Java program to demonstrate use of class and object.
5. Write a Java program to demonstrate use of constructor.
6. Write a Java program to demonstrate use of method overloading.
7. Write a Java program to demonstrate use of static members.
8. Write a Java program to demonstrate use of various string functions.
9. Write a Java program to demonstrate use of package.
10. Write a Java program to demonstrate interface.
11. Write a Java program to demonstrate use of inner class.



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## FACULTY OF COMMERCE & MANAGEMENT

### B.C.A. II Year - Semester III BCA – 37 Practical on Tally ERP

60 + 40 Pattern: External Marks 60 + Internal Marks 40 = Maximum Total Marks: 100

*[Total Practical's: 10 ]*

**Objective :** To practically train students in Accounting using Tally ERP.

### I] List A of Practical -

**Assignment - 1.** Create a Company BCA Ltd. to maintain Financial Accounts only using hypothetical address and other details. The company maintains its books of accounts on financial year basis.

- Make the default setting for printer assuming that the reports are printed on the stationery with a letterhead printed on the top that consumes the space of one inch.
- The Company wants to print the amount in Indian Currency with space between Rs and amount.

**Assignment - 2.** Create a Company Temporary Ltd. (Store data in C:/work/temp) having financial year as the accounting year. It is a newly set up company that has commenced its business from 1st October 2007. Other details may be entered as per your assumption, except the Income Tax Number (PAN); upon saving the company, enter the Income tax number PAN as FYBCA0278S. Delete the Company created for Temporary Ltd.

**Assignment - 3.** Create Groups following the hierarchy shown below -

- Debtors - International
- Debtors - National
- Debtor- South
- Debtor- North
- Debtor- Central

**Assignment - 4.** Create the following Ledger accounts, place under appropriate group (Create new groups whenever necessary)

- Wages paid to factory workers
- Wages paid to temporary workers
- Salary paid to H.O. employees
- Salary paid to Branch employees
- Share Capital ( Rs. 5,00,000 Cr.)
- Telephone Charges

**Assignment - 5. a)** Create at least 8 imaginary ledger account and place them under appropriate group – in the books of an Educational Institution.

**b)** Modify the above company to record account of a new asset which was not these earlier.

c) Creation of ledger consist of

1. Debtors in regional hierarchy, at least 4 groups
2. Sales at least 4 groups
3. Fixed assets groups at least 3 ledgers
4. Capital groups at least 3 – 5 parties ledgers
5. Purchases group at least 3 ledgers
6. Creditors at least 3 groups. Take imaginary opening balance.

Create the following Ledger

<b>Name</b>	<b>Group</b>	<b>Opening Bal. Rs.</b>
Khandesh Textile	Debtors- South	5,000 Dr.
Kanpur Textile	Debtor Central	0
Lucknow Textile	Debtor- North	0
Honda Corporation	Debtors- International	0
Jackson Textile	Debtors- International	0
Bank of Maharashtra	Bank Account	60,000 Dr.
Sales- Domestic	Sales Account	0
Sales- International	Sales Account	0
Purchases	Purchase Account	0
Building	Fixed Assets	6,00,000
Furniture	Fixed Assets	30,000

**Assignment –6.** Create a Short-life Company Ltd, and copy all the masters from the BCA Ltd. to the Short-life Company Ltd. Select the Short-life Company created, and check whether all the masters (Groups & Ledgers) have been copied. Delete the Short-life Company.

### **III] List B of Practical -**

1. Preparing Purchase Register and Sales Register entering the transactions relating to Purchase (including discount), Sales (including discount), Purchase>Returns, Sales>Returns [Minimum 8 to 10 transactions be recorded]
2. Preparing Trial Balance with the minimum of 10 to 12 transactions.
3. Preparing Balance Sheet with transactions regarding Trading and Profit & Loss Account with adjustments. Alternatively, preparing Income & Expenditure Account for a non-trading concern along with the Balance Sheet.
4. Modifying Vouchers, deleting Voucher entries – using imaginary transactions. The above list is illustrative. A teacher, if required, may conduct similar additional practical on the above line in such a way as to cover the syllabus. Minimum of 3 practical each must be completed by a student from List A & List B to get the Journal certified.

# Semester 4



# North Maharashtra University, Jalgaon

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## FACULTY OF COMMERCE & MANAGEMENT

### B.C.A. II Year - Semester IV BCA – 41 C#.NET

60 + 40 Pattern: External Marks 60 + Internal Marks 40 = Maximum Total Marks: 100

[ Total Lectures: 48 ]

**Objective :** To impart the knowledge of object oriented programming using C# among student.

#### 1: The .Net framework

Lectures 8

- a) Introduction to .NET framework
- b) The Origin of .Net Technology
- c) Common Language Runtime (CLR)
- d) Microsoft Intermediate Language (MSIL)
- e) Just-In –Time Compilation (JIT)

#### 2: C# as a Language

Lectures 8

- a) Introduction to C #
- b) Advantages & Disadvantages of C#
- c) Programming Structure of C#
- d) Basic Constructs – Variables, Data types, Operators, arrays, functions
- e) Control Statements (if statement, if....else statement, nesting of if....else statement, the else if ladder, switch statement ), Looping Construct(while statement, do statement, for statement)

#### 3: Object Oriented Programming in C#

Lectures 8

- a) Class and Object
- b) Constructors and Destructors
- c) Inheritance
- d) Interfaces
- e) Access modifiers: Public, Private, Protected
- f) Polymorphism
- g) Overloading and Overriding
- h) Sealed Classes

#### **4: Exception handling**

**Lectures 8**

- a) Types of errors
- b) Syntax of exception handling code
- c) Try and catch block
- d) Multiple Catch Blocks

#### **5: Windows Applications in C#.NET**

**Lectures 8**

- a) Introduction to GUI Programming
- b) GUI Components/ Controls (Windows Forms, Text Boxes, Buttons, Labels, Check Boxes, Radio Buttons, List Boxes, Combo Boxes, Picture Boxes, Timer, Scrollbars, Menus, Built-in Dialogs, Image List, Tree Views, List Views)

#### **6: ADO.NET**

**Lectures 8**

- a) Introduction to ADO.NET
- b) Components of ADO.NET
- c) ADO.NET Data Providers
- d) Working with Disconnected Data

#### **Reference Books:**

1. Illustrated C# 2008, Solis, Publication APRESS, ISBN 978-81-8128-958-2
2. Professional C# 4.0 and .NET 4 by Christian Nagel, Bill Evjen, Jay Glynn, Karli Watson, Morgan Skinner, WROX
3. Beginning C# Object-Oriented Programming By Dan Clark , Apress
4. ADO.NET Examples and Best Practices for C# Programmers, By Peter D. Blackburn Apress
5. Database Programming with C#, By Carsten Thomsen, Apress



# North Maharashtra University, Jalgaon

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## FACULTY OF COMMERCE & MANAGEMENT

### B.C.A. II Year - Semester IV BCA – 42 Stock And Commodity Market

60 + 40 Pattern: External Marks 60 + Internal Marks 40 = Maximum Total Marks: 100

[ Total Lectures: 48 ]

**Objective :** To impart the knowledge of capital market and global economy among student.

- |                                                                                                                            |                   |
|----------------------------------------------------------------------------------------------------------------------------|-------------------|
| <b>1) Introduction -</b>                                                                                                   | <b>Lectures 8</b> |
| a. Stock Exchanges (BSE, NSE, OTCEI) -                                                                                     |                   |
| i. Functions                                                                                                               |                   |
| ii. Advantages                                                                                                             |                   |
| iii. Organization                                                                                                          |                   |
| b. Growth of Indian Stock Market                                                                                           |                   |
| <br>                                                                                                                       |                   |
| <b>2) Primary Market</b>                                                                                                   | <b>Lectures 8</b> |
| a. Types of shares - Debentures- Bonds                                                                                     |                   |
| b. Initial Public Offer                                                                                                    |                   |
| c. Merchant banker to an issue                                                                                             |                   |
| d. Underwriters                                                                                                            |                   |
| e. Credit Rating Agencies                                                                                                  |                   |
| <br>                                                                                                                       |                   |
| <b>3) Secondary Market</b>                                                                                                 | <b>Lectures 8</b> |
| a. Meaning, Significance & Scope                                                                                           |                   |
| b. Secondary Market Intermediaries                                                                                         |                   |
| c. Stock brokers, Sub brokers, advisers                                                                                    |                   |
| d. Depositories                                                                                                            |                   |
| e. Custodian - Share transfer agents                                                                                       |                   |
| f. Listing                                                                                                                 |                   |
| <br>                                                                                                                       |                   |
| <b>4. Mutual Funds</b>                                                                                                     | <b>Lectures 8</b> |
| a. Concept                                                                                                                 |                   |
| b. Advantages of mutual fund investing                                                                                     |                   |
| c. Types of Funds :Liquid fund, Equity fund, Debt fund, Hybrid Fund, Commodity fund, Real Estate funds, Fund of Funds etc. |                   |
| <br>                                                                                                                       |                   |
| <b>5. Screen based trading</b>                                                                                             | <b>Lectures 8</b> |
| a. Types of Indexes : Nifty, Sensex, Sector Indexes                                                                        |                   |
| b. Client Code                                                                                                             |                   |
| c. Contract Note                                                                                                           |                   |
| d. Price Band                                                                                                              |                   |



- e. Clearing & Settlements
- f. Rolling Settlements
- g. Settlement guarantee funds
- h. Margin
- i. Arbitrage
- j. No Delivery Period

## **6. Commodity Derivatives**

## **Lectures 8**

- a. Concept of Commodity, Commodity Exchanges, Futures Contracts
- b. Differences between Physical & Future Market
- c. Trading in Commodity Markets
- d. Efficiency of Commodity Markets
- e. Size of Commodity Markets in India
- f. Benefits of Commodity Markets
- g. Commodity Markets of India
- h. Global Commodities Exchanges
- i. Commodity Specific Issue

### **Reference:**

- Everything you want to know about Stock Market Investing, Publisher : TV18 Broadcast Ltd (CNBC TV18)
- Master the Stock Market, Publisher : Diamond Books
- You Can be a Stock Market Genius, Publisher : Fireside



# North Maharashtra University, Jalgaon

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## FACULTY OF COMMERCE & MANAGEMENT

### B.C.A. II Year - Semester IV BCA – 43 Data Structure

60 + 40 Pattern: External Marks 60 + Internal Marks 40 = Maximum Total Marks: 100

[ Total Lectures: 48 ]

**Objective :** To impart the knowledge of data structure among student.

#### 1 : Introduction

**Lectures 8**

Meaning of Data, Data item, Elementary and Group Data items, Meaning of Data Structure, Linear and Non Linear Data Structure, Meaning of Algorithm, Algorithmic Notation, Big O Notation, Time Complexity and Space Complexity

#### 2 : Arrays

**Lectures 8**

Meaning of Array, Dimension of array, Linear and Non-Linear array, Representation of linear array in memory, Traversing linear array, Inserting and Deleting, Sorting (Bubble Sort, Selection Sort, Insertion Sort, Quick Sort, Merge Sort), Meaning of Heap, Searching (Linear Search, Binary Search), Multidimensional Array

#### 3 : Stack

**Lectures 8**

Meaning of Stack, Stack Operation, Array representation of Stack  
Polish notation, Arithmetic expression, Recursion,

#### 4 : Queues

**Lectures 8**

Meaning of Queue, Queue Operation, Dequeue, Priority queue

#### 5 : Linked Lists

**Lectures 8**

Meaning of Linked List, Representation of linked list in memory, Traversing, Searching, Insert, and Delete

#### 6 : Trees and Graphs

**Lectures 8**

Introduction to Tree, Binary tree, representing binary trees in memory, Traversing binary trees, Binary search trees, Graph:-Types, representation in memory

#### Reference Books:

- Schaum's Outline of Data Structures with C++
- Data Structure and Algorithms :Concept, Techniques and Application ,G.A.V.Pai
- Data Structure:Balucha



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## FACULTY OF COMMERCE & MANAGEMENT

### B.C.A. II Year - Semester III BCA 44 Cyber Crime and Security

60 + 40 Pattern: External Marks 60 + Internal Marks 40 = Maximum Total Marks: 100

[ Total Lectures: 48 ]

**Objective :** To impart the knowledge of Cybercrime and cyber security among student.

- 1. Introduction to Information Security** **6**  
History of Information Systems and its Importance, basics,  
Nature of Information Systems,  
Basic Principles of Information Security
- 2. Security Threats and Controls** **8**  
Information System Threats and attacks  
Security Threats to E Commerce,  
Business Transactions on Web,  
E-Governance ,Concepts in Electronics payment systems, Internet Banking, E-Cash, Credit/Debit Cards., Physical Security- Needs, Disaster and Controls, Access Control- Biometrics, Benefits of Biometrics Systems and Criteria for selection of Biometrics.
- 3. Cryptography** **8**  
Model of Cryptographic Systems,  
Issues in Documents Security, Digital Signature, Requirement of Digital Signature System, Finger Prints
- 4. Network Security** **8**  
Network Security- Basic Concepts, Dimensions, Perimeter for Network Protection, Network, Attacks, Need of Intrusion Monitoring and Detection, Intrusion Detection Virtual Private Networks- Need, Use of Tunneling with VPN, Authentication Mechanisms, Types of VPNs and their Usage, Security Concerns in VPN
- 5. Cyber Crime –** **10**  
Cyber Crime Introduction  
Email Tracing and Tracking , Email Spoofing  
Mobile Number Hacking  
Data Recovery  
Cyber Fraud Detection  
Hack Website

Web Server/ISP  
Web & DOS Attacks  
Security Policy

## **6. Cyber Law & IT Act**

**8**

Fundamentals of Cyber Law. Introduction to Indian Cyber Law: Information Technology Act 2000. Main features of the IT Act 2000, Information Technology Amendment Act 2008 and its major strengths.

### References :

1. Godbole, "Information Systems Security", Willey
2. Merkov, Breithaupt, "Information Security", Pearson Education
3. Yadav, "Foundations of Information Technology", New Age, Delhi
4. Schou, Shoemaker, "Information Assurance for the Enterprise", Tata McGraw Hill
5. Sood, "Cyber Laws Simplified", Mc Graw Hill
6. Furnell, "Computer Insecurity", Springer 7. IT Act 2000



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## FACULTY OF COMMERCE & MANAGEMENT

**B.C.A. II Year - Semester IV**

**BCA – 45 : Practical on Transaction related to Stock & Commodity**

60 + 40 Pattern: External Marks 60 + Internal Marks 40 = Maximum Total Marks: 100

*[ To Total Practical's: 04 ]*

**Objective :** To make the students aware online transaction related to stocks.

**(Note: The Student has to maintain a Journal in which the experience of the student at the visited place shall be written along with the supporting documents to the satisfaction of the internal guide teacher)**

1. Visit to an office of Broker/Sub-broker of Commodities and Stocks for understanding the organization and administration of office.
2. To study Stock purchase transactions on line with the help of software at the Broker/ Sub broker's office.
3. To study Stock sales transactions on line with the help of software at the Broker/ Sub broker's office.
4. To examine, study and obtain the output of account statements to be sent to the regular customers including commission and brokerage for the transactions during a specified period.



# North Maharashtra University, Jalgaon

(NACC Re-accredited 'A' Grade University)

## FACULTY OF COMMERCE & MANAGEMENT

**B.C.A. II Year - Semester IV**

**BCA – 46 : Practical on Data Structure using C++**

60 + 40 Pattern: External Marks 60 + Internal Marks 40 = Maximum Total Marks: 100

*[Total Practical's: 11 ]*

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**Objective :** To practically train students in Data structure using C++.

**Implement following programs using C++**

1. Matrices
2. Stack
3. Queue
4. Linked List
5. Bubble Sort
6. Selection Sort
7. Insertion Sort
8. Quick Sort
9. Merge Sort
10. Linear Search
11. Binary Search



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## FACULTY OF COMMERCE & MANAGEMENT

### B.C.A. II Year - Semester III BCA – 47 Practical on C#.NET

60 + 40 Pattern: External Marks 60 + Internal Marks 40 = Maximum Total Marks: 100

*[Total Practical's: 11]*

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**Objective :** To practically train students in programming in C#.NET

1. Write a program to print “Teach One, Each One, Tree One” given number of times
2. Write a program to show use of different operators
3. Write a program to show use of Looping Constructs
4. Write a program to show use of Constructor
5. Write a program to demonstrate Inheritance
6. Write a program to show use of Exception Handling
7. Create a simple C# application using Label, TextBox, Button control
8. Create a C# application using ListBox, ComboBox control
9. Demonstrate the use of Timer control in C#
10. Create a C# application using PictureBox, ScrollBar control
11. Demonstrate Simple Database Connectivity using wizard.