

Bachelor of Computer Applications

THIRD SEMESTER EXAMINATION

Code No.	Paper	L	T/P	Credits	Marks Internal	Marks External
THEROY PAPERS						
BCA 201	Mathematics – III	3	1	4	25	75
BCA 203	Computer Architecture	3	1	4	25	75
BCA 205	Front End Design Tool VB.Net	3	1	4	25	75
BCA 207	Principles of Accounting	3	0	3	25	75
BCA 209	Object Oriented Programming using C++.	3	1	4	25	75
PRACTICALS						
BCA 251	Practical – V .NET Lab	0	6	3	40	60
BCA 253	Practical – VI C++ Lab	0	6	3	40	60
BCA 255*	Software Development Skills	2	0	2	100	-----
	Total	17	16	27	305	495

***NUES
TOTAL MARKS: 800**

Note : A Minimum of 40 Lectures is mandatory for each course.
Syllabus of Bachelor of Computer Applications (BCA), approved by BCA Coordination Committee on 26th July 2011 & Sub-Committee Academic Council held 28th July 2011. W.e.f. academic session 2011-12

Paper Code: BCA 201
Paper: Mathematics – III
Paper ID 20201

L	T	C
3	1	4

Pre-requisites: Mathematics I and Mathematics II

Aim : To Understand the use of the basic data structures along with their applications.

Objectives :

To get the knowledge about the important mathematical concepts & their application.

INSTRUCTIONS TO PAPER SETTERS:

Maximum Marks: 75

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 12.5 marks.

UNIT – I

Measures of Central Tendency & Dispersion

Definition, Importance & Limitation. Collection of data and formation of frequency distribution. Graphic presentation of frequency distribution – graphics, Bars, Histogram, Diagrammatic. Measures of central tendency – mean, median and mode, partition values – quartiles, deciles and percentiles. Measures of variation – range, IQR, quartile, deciles and percentiles.

[No. of Hrs: 11]

UNIT – II

Correlation/Regression

Correlation Coefficient; Assumptions of correlation analysis; coefficients of determination and correlation; measurement of correlation- Karl Person's Methods; Spearman's rank correlation; concurrent deviation the correlation coefficient; Pitfalls and limitations associated with regression and correlation analysis; real world application using IT tools

[No. of Hrs: 11]

UNIT – III

Linear Programming & Queuing

Concept a assumptions usage in business decision making linear programming problem: formulation, methods of solving: graphical and simplex, problems with mixed constraints: duality; concept, significance, usage & application in business decision making.

Queuing Models: Basic structure of queuing models, Birth-Death queuing models and its steady state solution, M/M/1 and M/M/C models with infinite/finite waiting space.

PERT,CPM

[No. of Hrs: 11]

UNIT – IV

Transportation & Assignment Problem

General structure of transportation problem, solution procedure for transportation problem, methods for finding initial solution, test for optimality. Maximization of transportation problem, transportation problem. Assignment problem approach of the assignment model, solution methods of assignment problem, maximization in an assignment, unbalanced assignment problem, restriction on assignment.

[No. of Hrs: 11]

TEXT BOOKS

[T1] Sharma, J.K.; Operations Research: problems & solutions; Macmillan India

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- [T2] Gupta, S.P. and Gupta, P.K.; Quantitative Techniques and Operations Research, Sultan Chand & Sons
- [T3] Vohra, N.D.; Quantitative Techniques in Management 2003.
- [T4] Gupta, S.P. Statistical Methods, Sultan Chand & Sons. 2004
- [T5] A. M. Natarajan, P Balasubramani A. Tamilarasi, Operations Research, Pearson 2005

REFERENCE BOOKS

- [R1] R.L.Rardin, Optimization in Operations Research, Prentice Hall.
- [R2] A.Racindran, D.T.Phillips, J.S.Solberg, Second edition, John Wiley.

Paper Code: BCA-203
Paper: Computer Architecture
Paper ID : 20203

L	T/P	C
3	1	4

Pre-requisite :

- BCA 106 Digital Electronics

AimTo understand the concepts in modern computer architecture

Objectives

- To learn the design of Control Unit and ALU of a typical computer
- To learn about the memory, input –output organization of a typical computer
- To learn the concepts of pipelining and vector processing.

INSTRUCTIONS TO PAPER SETTERS:

MAXIMUM MARKS: 75

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 12.5 marks.

UNIT-I

Register Transfer and Micro-operations: Register Transfer Language, Register Transfer, Bus and Memory Transfers, Arithmetic Micro-operations, Logic Micro-operations, Shift Microoperations, Arithmetic logic shift unit

Basic Computer Organizations and Design: Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, Register reference instructions, Input - Output Instructions, Design of Accumulator Logic [T1]

[No. of Hrs: 11]

UNIT-II

Design of Microprogrammed Control Unit

Central Processing Unit: Introduction, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes. Difference between RISC and CISC .

Pipeline and Vector Processing: Arithmetic and Instruction pipeline, Vector operations, Matrix Multiplication, memory interleaving.[T1,R2]

[No. of Hrs: 11]

UNIT-III

Computer Arithmetic: Introduction, Multiplication Algorithms, Division Algorithms, for fixed point-members.[T1,R2]

Input-Output Organization: Peripheral Devices, Input-Output Interfaces, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, Direct Memory Access (DMA)[T1]

[No. of Hrs: 11]

UNIT-IV

Memory Organization: Memory Hierarchy, Main Memory, Auxiliary Memory, Associative Memory, Cache Memory, Virtual Memory, Memory Management Hardware[T1]

[No. of Hrs: 11]

TEXT BOOKS :

[T1]. Morris Mano, Computer System Architecture, 3rd Edition, Prentice-Hall of India Private Limited, 1999.

REFERENCE BOOKS:

[R1]. William Stallings, Computer Organization and Architecture, 4th Edition, Prentice Hall of India Private Limited, 2001

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[R2]. Subrata Ghosal, "Computer Architecture and Organization", Pearson 2011
[R3]. Malvino, "Digital Computer Electronics: An Introduction to Microcomputers",
McGraw Hill,

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Paper Code: BCA 205

Paper ID: 20205

Paper: Front End Design Tool VB.Net

L T C

3 1 4

Pre-requisite:

- Basic Programming Constructs
- Object Oriented Concepts

Aim

To understand Object Oriented and Object based programming paradigm in event based programming environment.

Objectives

- To get the Knowledge about different Object Oriented Features.
- To understand disconnected architecture of .Net.

INSTRUCTIONS TO PAPER SETTERS:

Maximum Marks : 75

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 12.5 marks

UNIT I

Introduction: Introduction to .Net, Two tier and Three tier client server model, .Net Architecture, Features of .Net, Advantages of .Net, .Net Framework, CLR, CTS, CLS, Assemblies, Memory management issues – Garbage Collector and collection process, Exception Handling, Code Access Security. [T1,R2]

[No. of Hrs: 11]

UNIT – II

Introduction to Visual Basic.Net IDE: Creating a project, Types of project in .Net, Exploring and coding a project, Solution explorer, toolbox, properties window, Output window, Object Browser. [T1, T2]

VB.Net Programming Language: Similarities and Differences with Visual Basic, Variables, Comments, Data Types, Working with Data Structures – Arrays, Array Lists, Enumerations, Constants, Structures; Introduction to procedures, calling procedures, argument passing mechanisms, scope of variable.

Control Flow Statements – conditional statement, Loops, Nesting of Loops, MsgBox and Input Box. [T1,R2]

[No. of Hrs: 11]

UNIT-III

GUI Programming: Introduction to Window Applications, Using Form – Common Controls, Properties, Methods and Events. Interacting with controls - Textbox, Label, Button, Listbox, Combobox, Checkbox, Picture Box, Radio Button, Panel, scroll bar, Timer, ListView, TreeView, toolbar, Status Bar. Dialog Controls, Creating and Using MDI applications, Toolbar, Status Bar, Creating custom controls, Creating Menus. [T1, T2, R1]

Object Oriented Features: Classes and Objects, Access Specifiers: Private, Public and Protected, Building Classes, Reusability, Constructors, Inheritance, Overloading, Overriding, Creating and Using Namespaces. [T2, R1]

[No. of Hrs: 11]

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UNIT – IV

Introduction to ADO: ADO vs ADO.Net, ADO.Net data namespaces, ADO.Net Object Model, Accessing data from Server Explorer, Creating Connection, Command, Data Adapter, Data Reader and Data Set with OLEDB and SQLDB, Data Binding. [T1, R1, R2]

Crystal Report : Connection to Database, Table, Queries, Building Report, Modifying Report, Formatting Fields, Publishing and exporting reports.. [T2]

[No. of Hrs: 11]

TEXT BOOKS

[T1] Visual Basic 2010 programming Black Book, by Kogent Learning Solutions, Wiley India

[T2] Visual Basic 2010 Step By Step, Michael Halvorson, PHI

.

REFERENCE BOOKS

[R1] Mastering Microsoft Visual Basic 2010, Evangelos Petroustos, Wiley Publications

[R2] Beginning Visual Basic 2010 (Wrox)

Paper Code: BCA 207

L T C

Paper ID: 20207

3 0 3

Paper: Principles of Accounting

Pre-requisites: None

Aim: To understand the basics of accounting and its application in general business environment

Objectives

- To get the Knowledge about the important concepts and characteristics of accounting.
- To study the application of accounting in the general business environment.

INSTRUCTIONS TO PAPER SETTERS:

Maximum Marks : 75

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

UNIT I

Meaning and nature of accounting, Scope of financial accounting, Interrelationship of Accounting with other disciplines, Branches of Accounting, Accounting concepts and convention, Accounting standards in India.

[No. of Hrs: 11]

UNIT – II

Journal, Rules of Debit and Credit, Sub Division of Journal: Cash Journal, Petty Cash Book, Purchase Journal, Purchase Return, Sales Journal, Sales Return Journal, Ledger, Trial Balance

[No. of Hrs: 11]

UNIT-III

Preparation of Final Accounts, Profit & Loss Account, Balance Sheet-Without adjustments and with adjustments.

[No. of Hrs: 11]

UNIT – IV

Meaning of Inventory, Objectives of Inventory Valuation, Inventory Systems, Methods of Valuation of Inventories-FIFO, LIFO and Weighted Average Method, Concept of Depreciation, Causes of Depreciation, Meaning of Depreciation Accounting, Method of Recording Depreciation, Methods of Providing Depreciation.

[No. of Hrs: 11]

TEXT BOOKS

[T1] Maheshwari, S.N. and Maheshwari, S. K., (2009) An Introduction to Accountancy, Eighth Edition, Vikas Publishing House.

[T2] Tulsian, P.C., (2009) Financial Accountancy, 2nd edition, Pearson Education.

REFERENCE BOOKS

[R1] Gupta R. L., & Gupta V.K., “Principles & Practice of Accounting”, Sultan Chand & Sons, 1999.

[R2] Monga J R, “Introduction to Financial Accounting”, Mayur Paperbacks, 2010.

[R3] Raja Sekaran/Lalitha, “Financial Accounting”, Pearsons .

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Paper Code: BCA 209

L T C

Paper ID: 20209

3 1 4

Paper: Object Oriented Programming using C++

Pre-requisites:

- BCA-105(Introduction to Programming using 'C')
- Data Structure Concepts

Aim: To understand the basics of Object Oriented Programming and their applications.

Objectives:

- To gain knowledge of objects, Class, Data Abstraction, Encapsulation, Inheritance, Polymorphism and Dynamic Binding.
- To know about constructing programs using Bottom-up design approach.

INSTRUCTIONS TO PAPER SETTERS:

Maximum Marks : 75

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

UNIT – I

Introduction: Introducing Object-Oriented Approach, Relating to other paradigms (functional, data decomposition). Features of Procedure oriented programming, Basic Concepts of Object Oriented Programming, Benefits of OOP, Applications of OOP, Difference between C and C++, cin, cout, new, delete operators.

C++ Environment: Program development environment, the language and the C++ language standards. C++ standard libraries.

Introduction to various C++ compilers, C++ standard libraries, Testing the C++ program in Turbo C++/Borland C++/MicroSoft VC++/GNU C++ compiler. [T1][T2][T3]

[No. of Hrs: 12]

UNIT – II

Classes and Objects: Encapsulation, information hiding, abstract data types, Object & classes, attributes, methods, C++ class declaration, references, this pointer, Function Overloading, Constructors and destructors, instantiation of objects, Default parameter value, C++ garbage collection, dynamic memory allocation, Meta class/abstract classes.[T1][T2]

[No. of Hrs. 12]

UNIT – III

Inheritance and Polymorphism: Inheritance, Class hierarchy, derivation – public, private & protected, Aggregation, composition v/s classification hierarchies, Polymorphism, Categorization of polymorphism techniques, Method polymorphism, Polymorphism by parameter, Operator overloading, Parametric polymorphism, Virtual Function, Early v/s Late Binding.[T1][R2]

[No. of Hrs: 10]

UNIT – IV

Generic Programming – Introduction, templates, template functions, Overloading of template functions, Overriding inheritance methods.

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Files and Exception Handling: Persistent objects, Streams and files, Namespaces, The basic stream classes: C++ predefined streams, Error handling during file operations, Command Line Arguments. Types of Exception, Catching and Handling Exceptions.[T1][T3]

[No. of Hrs: 10]

TEXT BOOKS

[T1] Ashok N. Kamthane, “Object-Oriented Programming With Ansi And Turbo C++”, Pearson Education.

[T2] A.R.Venugopal, Rajkumar, T. Ravishanker “Mastering C++”, TMH, 1997.

[T3] E. Balguruswamy, “C++ ”, TMH Publication ISBN 0-07-462038-x .

REFERENCE BOOKS

[R1] Mahesh Bhawe, “Object Oriented Programming with C++”, Pearson Education.

[R2] D . Parasons, “Object Oriented Programming with C++”, BPB Publication.

[R3]Steven C. Lawlor, “The Art of Programming Computer Science with C++”, Vikas Publication.

[R4] Schildt Herbert, “C++: The Complete Reference”, 4th Ed., Tata McGraw Hill, 1999.

[R5] R. Lafore, “Object Oriented Programming using C++”, Galgotia Publications, 2004.