B.Sc. (Comp. Science) IIIrd Year 2013

1. Courses of Study and Examination

Paper	Paper Name	Duration of exam. (hours)	Max. Marks		Total
			University Exam.	Internal Assessment	
Paper-I (BCS-301)	Systems Software	3	75	25	100
Paper-II (BCS-302)	Visual Programming	3	75	25	100
Paper-III (BCS-303)	Unix Programming	3	75	25	100
Paper-IV (BCS-304)	Data Communication and Networking	3	75	25	100
Paper-V (BCS-305)	Software Engineering	3	75	25	100
Practical-I (BCS-306)	Visual Programming Lab	3	150	50	200
Practical-II (BCS-307)	Unix Lab	3	150	50	200
	TOTAL		675	225	900

BCS 301: Systems Software

Time: 3 Hrs. **Max.Marks: 75**

Unit - I: Language processors - Language processing activities and fundamentals - Language specification - Development Tools - Data Structures for Language processing- Scanners and Parsers.

Unit - II: Assemblers: Elements of Assembly language programming - Overview of the Assembly process - Design of a Tow-pass Assembler - A single pass Assembler for the IBM PC.

Unit - III: Macros and Macro processors - Macro definition, call, and expansion - Nested macro calls - Advanced macro facilities - Design of a macro preprocessor - Compilers: Aspects of compilation.

Unit - IV: Compilers and Interpreters - Memory allocation Compilation of Expressions and Control structures - Code optimization - Interpreters.

Unit - V: Linkers : Linking and Relocation concepts - Design of a linker - Self relocating Programs - A linker for MS DOS - Linking for over-lays - loaders Software tools: Software tools for program development - Editors - Debug monitors - Programming environments - User interfaces.

Text:

1. D.M. Dhamdhere, Systems Programming and Operating Systems, Second Revised Edition, Tata McGrawhill Publ. Company 1999.

References:

1. L.L. Beck, "System Software, An Introduction to System Programming", Addison-Wesley, 1985.

BCS 302: Visual Programming

Time: 3 Hrs. **Max.Marks: 75**

UNIT I

Client Server Basics: Discover Client-Server and Other Computing Architectures, Understand File Server Versus Client-Server Database Deployment, Learn About the Two Tier Versus Three Tire Client-Server Model, Visual Basic Building Blocks and Default Controls: Forms, Using Controls, Exploring Properties, Methods and Events, Introduction To Intrinsic Controls, Working With Text, Working With Choices, Special Purpose Controls, VB Advance Controls: Events, Menu bar, Popup Menus, Tool bar, Message Box, Input Box, Built-in Dialog Boxes, Creating MDI, Working with Menus

UNIT II

VB Programming Fundamentals And Variables: Introduction to Variables, Variable Declaration, Arrays, Introduction to Constants and Option Explicit Statement, Assignment Statements, Working With Math Operations, Strings, Formatting Functions, Controlling and Managing Program: All Control Statements, Loops, Error Trapping, Working With Procedures, Functions, Controlling How Your Program Starts, Common controls and control arrays: Introduction to common controls- Tree view, list view, tab strip, Creating and working with control arrays.

UNIT III

Visual Basic and databases: Understanding the Data Controls and Bound Controls, Introduction to Data Form Wizard, Introduce DAO, Working With Record sets, Record Pointer, Filters, Indexes, Sorts And Manipulation of Records. Remote and ActiveX Data Objects: Working With ODBC, Remote Data Objects and Remote data Control, Introducing ADO, ADO Data Control

UNIT IV

Using Data Grid Control and ActiveX Data Objects. ActiveX Controls, Extending ActiveX Controls and Classes: Creating, Testing, Compiling, Enhancing and User Drawn ActiveX Controls, Using ActiveX Control Interface Wizard and Property Pages Wizard, Introducing Ambient, Extender Objects, Creating Property Pages, Building Class Modules, ActiveX DLL.

UNIT V

Client-Server Development Tools: COM, Services Models, Development Tools Included with VB 6, Working With SourceSafe Projects. Reports and Packaging: Data Reports and Crystal Reports, Packaging A Standard EXE Project, VB And Internet: Introduction to VBScript, Tools used with VBScript and VBScript Languages, Introduction to Active Server Pages, ASP Objects.

References:

1. Gary Cornell - Visual Basic 6 from the Ground up - Tata McGraw Hill - 1999.
2. Noel Jerke - Visual Basic 6 (The Complete Reference) - Tata McGraw Hill - 1999.

BCS 303: Unix Programming

Time: 3 Hrs. **Max.Marks: 75**

Unit - I: INTRODUCTION:

File and common commands - Shell - More about files - Directories- Unix system - Basics of file Directories and filenames - Permissions - modes - Directory hierarchy - Devices - the grep family - Other filters - the stream editor sed - the awk pattern scanning and processing language - files and good filters.

Unit - II: CONCEPTS OF SHELL:

Command line structure - Metacharacters - Creating new commands - Command arguments and parameters - program output as arguments - Shell variables - More on I/O redirection - loop in shell programs - Bundle - Setting shell attributes, Shift command line parameters - Exiting a command or the shell, evaluating arguments - Executing command without invoking a new process - Trapping exit codes -- Conditional expressions.

Unit - III: SHELL PROGRAMMING:

Customizing the cal command, Functions of command, While and Until loops - Traps - Catching interrupts - Replacing a file - Overwrite - Zap - Pick command - News command - Get and Put tracking file changes.

Unit - IV: FEATURES IN UNIX:

Standard input and output - Program arguments - file access - A screen at a time printer - On bugs and debugging - Examples - Zap - pick - Interactive file comparison program - Accessing the environment - Unix system calls - Low level I/O, File system Directories and modes, Processors, Signal and Interrupts.

Unit - V: PROGRAM DEVELOPMENT AND DOCUMENT PREPARATION:

Program development - Four function calculator - Variables and error recovery - Arbitrary variable names, Built in functions, Compilation into a machine, Control flow and relational operators, Functions and procedures - Performance evaluation - Ms macro package - Troff level - Tbl and eqn preprocessors - Manual page - Other document preparation.

Text Book for Study:

1. Brian W. Kernighan, Rob Pike - The UNIX Programming Environment - Prentice Hall of India(1984).

References:

I. Steven Earhart - The UNIX System for MSDOS Users - Galgotia book source P. Ltd. (1990).
II. Stefen Prata - Advanced UNIX - A Programmer Guide.

BCS 304 : Data Communication and Networking

Time: 3 Hrs. **Max.Marks: 75**

Unit - I:

Introduction to Data Communication. Network, Protocols & standards and standards organizations - Line Configuration - Topology - Transmission mode - Classification of Network - OSI Model - Layers of OSI Model.

Unit - II:

Parallel and Serial Transmission - DTE/DCE/such as EIA-449, EIA-530, EIA-202 and x.21 interface - Interface standards - Modems - Guided Media - Unguided Media - Performance - Types of Error - Error Detection - Error Corrections.

Unit - III:

Multiplexing - Types of Multiplexing - Multiplexing Application - Telephone system - Project 802 - Ethernet Token Bus - Token Ring - FDDI - IEEE 802.6 - SMUS - Circuit Switching - Packet Switching - Message switching - Connection Oriented and Connectionless services.

Unit - IV:

History of Analog and Digital Network - Access to ISDN - ISDN Layers - Broadband ISDN - X.25 Layers - Packet Layer Protocol – ATM, ATM Topology - ATM Protocol.

Unit - V:

Repeaters - Bridges - Routers - Gateway - Routing algorithms - TCP/IP Network, Transport and Application Layers of TCP/IP - World Wide Web.

Text:

1. Behrouz and Forouzan - Introduction to Data Communication and Networking - 2nd Edition - TMH - 2001.

Reference:

1. Jean Wairand - Communication Networks (A first Course) - Second Edition - WCB/ McGraw Hill - 1998.

BCS 305 Software Engineering

Time: 3 Hrs. **Max.Marks: 75**

UNIT - I:

Introduction to Software Engineering: Definitions-Size Factors - Quality and Productivity Factors - Managerial Issues - Planning a software project: Defining the problem - Developing a Solution Strategy - Planning the Development Process - Planning an Organization structure - Other Planning Activities.

UNIT - II:

Software Cost Estimation: Software cost factors - Software Cost Estimation Techniques - Staffing-level Estimation - Estimating Software Maintenance Costs - The Software Requirements Specification - Formal Specification Techniques - Languages and Processors for Requirements Specification.

UNIT - III:

Software design: Fundamental Design Concepts - Modules and Modularization Criteria - Design Notations - Design Techniques - Detailed Design Considerations - Real-Time and Distributed System Design - Test Plans - Milestones, walkthroughs, and Inspections.

UNIT - IV:

Implementation issues: Structured Coding Techniques - Coding Style - Standards and Guidelines - documentation guidelines -Type Checking - Scoping Rules - Concurrency Mechanisms.

UNIT - V:

Quality Assurance - Walkthroughs and Inspections - Static Analysis - Symbolic Execution - Unit Testing and Debugging - System Testing - Formal Verification: Enhancing Maintainability during Development - Managerial Aspects of Software Maintenance - Source Code Metrics - Other Maintenance Tools and Techniques.

Books for Study:

1. R.Fairley, Software Engineering Concepts, Tata McGraw-Hill Edn. 1997.
2. R.SPressman, Software Engineering, Fourth Ed., McGraw Hill, 1997.