



MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY

NAAC Accreditation Grade "B"
(With effect from Academic Year 2015-2016)

Academic Council: 23 / 11 / 2013, R.No. (2)

T.Y. B.C.A.

Paper No	Title of the Paper	Total Marks	Passing Standard	Total Teaching Hours
BCA-301	Linux Shell Programming	100	40	3 hrs. per week * 30 weeks = 90 hrs.
BCA-302	Data communication and networking	100	40	3 hrs. per week * 30 weeks = 90 hrs.
BCA-303	Java Programming	100	40	3 hrs. per week * 30 weeks = 90 hrs.
BCA-304	Operation Research	100	40	3 hrs. per week * 30 weeks = 90 hrs.
BCA-305	RDBMS-II	100	40	3 hrs. per week * 30 weeks = 90 hrs.
BCA-306	Web application development using ASP.Net	100	40	3 hrs. per week * 30 weeks = 90 hrs.
BCA-307	Practical Based on 303,305,306	100	40	6 hrs. per week * 30 weeks = 180 hrs.



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Paper – 301 Linux Shell Programming

Total Marks: 100

Unit	Detailed Syllabus	Marks
Unit - 1	Introduction <ul style="list-style-type: none">History of Unix Operating System Definition of Kernel, Shell, File, Process, System Calls.,Linux Operating System, Features of Unix and Linux Operating System,Concept of Open source software, Application area of Linux Operating SystemVarious Linux FlavorsDesktop Environment : (a) X Window Basics (b) KDE Basics (c) GNOME BasicsTerms and condition of Copying, Distribution, and Modifications (Linux & GNU)Advantages and Disadvantages of Linux	20
Unit – 2	File Structure and Linux Shells. <ul style="list-style-type: none">Understanding File system hierarchy standard.Directory CommandsFile and Directory commands:Understanding Job (process).Process Commands:User commands:Misc CommandsKeyboard commands using ctrl key.	20
Unit – 3	User Management <ul style="list-style-type: none">GUI user management tools: User admin and KUserPassword file, Managing user environmentAdding and removing users with useradd, usermod and userdelManaging groups, Controlling access to directories and file using chmod	20
Unit – 4	Networking concepts & Server configuration <ul style="list-style-type: none">Basics of network system, Basics of TCP/IP Networking, IP address, IP address class and mask, port number, DNS, NFS server configurationTelnet and FTP server fundamentalsBasics of Samba server: Installation and configuration.	20
Unit -5	Bash Shell Programming <ul style="list-style-type: none">Introduction to Vi EditorsIntroduction to Shell : Korn, Bash, and C Shell with their differenceVariables in shell, how to print or access values in shell, echo command.Shell arithmetic, commands and command line arguments, I/O redirectionStructured language construct: if, else, else – if, case statement, loops in shell, Arrays, Command line argument.	20

Reference / Text-Books / Additional Reading:

- Richard Petersen: The complete reference – 6th edition – McGraw Hill
- Sumitabha Das: Concepts and Application of UNIX 4th edition – Tata McGraw Hill
- Peter Nortons's: Complete Guide to Linux, Techmedia
- Yashwant Kanitkar: Unix Shell Programing, BPB Publication



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Paper – 302 Data Communication and Networking

Total Marks: 100

Unit	Detail topic	Marks
Unit-1	<u>Introduction & Transmission Media</u> <ul style="list-style-type: none">♣ Overview Computer Network♣ Communication system & channel♣ Analog and Digital Data♣ Multiplexing♣ Twisted pair wire, Coaxial cable♣ Radio, VHF, Microwave, Infrared- Millimeter waves, fiber optic	20
Unit-2	<u>Data Communication & Satellite Communication</u> <ul style="list-style-type: none">♣ Basics of data link layer - framing, error control and flow control♣ Error detecting codes♣ Data link protocols - Unrestricted Simplex protocol, Simplex stop and wait protocol, Simplex protocol for noisy channel♣ Optical source, Propagation in fiber, light detector♣ Satellite link, Satellite communication, FDDI	20
Unit-3	<u>Data Network and Data communication system</u> <ul style="list-style-type: none">♣ Switching techniques, digital telephony♣ Routing Algorithms –shortest path routing, flooding, broadcast routing, multicast routing, ISDN♣ PABX, Facsimile(Fax)	20
Unit-4	<u>Network Topology Architecture and Standard</u> <ul style="list-style-type: none">♣ LAN , MAN, WAN and Network topology♣ OSI Model, TCP/IP-Reference model♣ IP Protocol, IP packet format, IP addressing.♣ Ethernet, token bus, Token ring, Fast Ethernet♣ Blue Tooth Overview, IEEE standard 802 for LAN & WAN♣ Tunneling and routing	20
Unit-5	<u>Network protocol and Security</u> <ul style="list-style-type: none">♣ DLP, X.25, ATM, TCP/IP♣ Elementary data link protocols♣ Sliding window protocol♣ Network security and cryptography, Public key algorithms♣ DNS (Domain Name system), E-Mail, Virtual Private network♣ Firewall, Internetworks, Basics of Repeaters, Hubs, Bridges, Switches, Routers, Gate Ways, Repeater, modem, hub, switches	20

Reference/Text Book/additional reading:

1. Computer Network, Andrew S. Tanenbaum, Prentice Hall India Publication.
2. Data Communication and Networking, Dr. M. Jain & Satish Jain, BPB Publication.
3. Data Communications and Networking, Behrouz A. Forouzan, McGraw Hill.



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Paper – 303 Java Programming

Total Marks: 100

Unit	Detailed Syllabus	Marks
Unit-1	Fundamentals of Java Programming <ul style="list-style-type: none">♣ History of Java, Basic OOP Concepts – Abstraction, Encapsulation, Inheritance, Polymorphism♣ Java Language Basics – Benefits, Applications, Byte Code, Buzzwords♣ Data types, Variables, Arrays♣ Operators, Control Statements, Command Line Arguments♣ Classes and Objects	20
Unit-2	Programming in Java <ul style="list-style-type: none">♣ Inheritance♣ Packages♣ Interfaces♣ Exception Handling♣ Multi Threading	20
Unit-3	Strings, Characters and I/O in Java <ul style="list-style-type: none">♣ String Class and its methods, String Buffer Class and its methods♣ Reading and Writing to console♣ Reading and Writing to Files (As Characters and Byte Streams)♣ Random Access File♣ Serialization	20
Unit-4	Java applet programming and Event Handling <ul style="list-style-type: none">♣ Types of Applets, Applet Architecture♣ An Applet Skeleton♣ Simple Applet Display Methods, Passing Parameters to Applets♣ Event Handling Mechanisms♣ The Delegation Event Model, Event Classes	20
Unit-5	AWT – Working with Windows, Graphics, Text and Controls <ul style="list-style-type: none">♣ AWT Classes♣ Windows Fundamental♣ Frame Windows, Frame Window in Applet♣ Graphics, color, Text output Using Font Metrics♣ Controls – Labels, Button, Check Box, Scroll bar, Text field and Text area	20

Reference / Text-Books / Additional Reading:

1. Compete Reference Java By Herbert Schildt Publisher: TMH
2. Programming in JAVA By E-Balaguruswami
3. JAVA PROGRAMMER'S REFERENCE by GRANT PALMER



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Paper – 304 Operational Research:

Total Marks: 100

Unit	Detailed Syllabus	Marks
Unit-1	Basic of OR <ul style="list-style-type: none">♣ History of OR?♣ Definitions of OR♣ OR Application	20
Unit-2	Linear Programming <ul style="list-style-type: none">♣ Mathematics model, assumption of linear programming.♣ Graphical solution, simplex method	20
Unit-3	Special Types of Linear Programming Problem <ul style="list-style-type: none">♣ Transportation problem♣ Assignment models♣ Traveling Salesman Problem	20
Unit-4	Project Scheduling PERT-CPM <ul style="list-style-type: none">♣ Diagram representation, Critical path calculations♣ Time Chart, Resource leveling, Cost considerations in project♣ Scheduling, project control.	20
Unit-5	Sequencing and Replacement Models <ul style="list-style-type: none">♣ Processing n jobs through two machines.♣ Processing n jobs through m machines♣ Processing Two jobs through m machines♣ Replacement problem & models	20

Reference Books: -

1. Sharma J. K.: Operation Research-Theory & Application, Macmillan Pub.
2. Sharma S. D.: Operation Research-Theory & Application, Macmillan Pub.
3. Mastafi C.K.: Operation Research- Methods & Practice, Wiley Eastern Ltd.



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Paper – 305 RDBMS – II

Total Marks: 100

Unit	Detailed Syllabus	Marks
Unit-1	RDBMS Concept <ul style="list-style-type: none">❖ Data models (Hierarchical Model, Network model, Relational model, Object relational model)❖ Database Structure and Space Management, Memory Structure, Process Architecture❖ E-R Diagram, Normalization.❖ Client Server Architecture, Multi tier Architecture, Distributed Processing❖ Code's Rules❖ How oracle works.	20
Unit-2	SQL * Plus <ul style="list-style-type: none">❖ Introduce DDL, DML, DCL. & TCL❖ Oracle data types and Oracle functions.❖ Types of integrity, integrity constraints.❖ Simple and advance query generation.❖ Schema and Schema object: View, Sequence, index, synonyms.	20
Unit-3	PL/SQL-I <ul style="list-style-type: none">❖ Introduction of PL / SQL Blocks,PL/SQL Engine,PL/SQL, Programming❖ How PL / SQL work Control structure of PL/SQL.❖ Cursor: Introduction of Cursor,types of Cursor, Declaring Cursor, Attributes of Cursor, Accessing cursor,Closing Cursor.❖ Exception Handling: Introduction of Exception Handling ,Predefine Exception,Undefine Execution, User Define Exception,	20
Unit-4	PL/SQL-II <ul style="list-style-type: none">❖ Stored Procedure:Creating and Executing Stored Procedure❖ Function:Creating and Executing Function❖ Trigger: Components of trigger, types of trigger, creating a trigger.❖ Locking: Implicit and explicit locking	20
Unit-5	Introduction to DBA <ul style="list-style-type: none">❖ Role of DBA.❖ Users: Creating a new user, grant command, deleting user.❖ Privileges: System privileges, object privileges, Assigning object privileges to a user, Viewing User & privileges, revoking a system & an object privileges.❖ Role: Creating a role, Granting privileges & roles to a role, granting role to a user, viewing the role of a user.❖ Database Backup & Recovery and import-export utility.❖ SQL Loader Utility	20

Reference / Text-Books / Additional Reading:

1. Learn Oracle 8i. By Jose A. Ramalho. Published by: BPB
2. SQL in 21-Days - Techmedia
3. PL/SQL in 21 Days - Techmedia
4. SQL, PL/SQL:THE PROGRAMMING LANGUAGE OF ORACLE By Evan Bayross



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Paper – 306 Web Application Development Using ASP.Net

Total Marks: 100

Unit	Detail Syllabus	Marks
Unit-1	Introduction <ul style="list-style-type: none">♣ Introduction of Visual Web Developer♣ Basics of Web Application Development♣ Introduction of Web-Forms♣ Advantage, Feature, New in ASP.Net 2.0, Page Life Cycle, Event Life Cycle, Global application class, Web configure file.♣ Basics Controls: Label,Text Boxes, Link Labels,Button, Image button, Link button, List box control, Place holder etc	20
Unit-2	Standard Controls <ul style="list-style-type: none">♣ Image Control, File upload,♣ Drop Down Lists, Bulleted Listed, Checkbox, Radio Buttons♣ Hyper link, Tables Panels♣ Tree View Control and Menu♣ Sitemap Path control and Wizard Control	20
Unit-3	Advance Controls <ul style="list-style-type: none">♣ Required Field Validators, Range Validators, Regular Expression validators, Custom Validations, Validation Summary,♣ Ad Rotators♣ Login Controls♣ HTML Controls♣ Master Pages and Themes	20
Unit-4	Working With Data Base <ul style="list-style-type: none">♣ Working MS-SQL-Server Database♣ Working With ADO.NET♣ Accessing Data with Sever Explores, Binding Data♣ Database programming using code♣ Working with data controls	20
Unit-5	Working With Ajax Controls and Web-Services <ul style="list-style-type: none">♣ Architecture of ASP.NET Ajax♣ Working with Ajax Controls (Script Manager, Update Panel, Timer, Accordion, AutoComplete, Calendar, FilteredTextbox♣ Introduction to Web-Services♣ Creating and Deploying web services♣ Small Application development	20

Reference / Text-Books / Additional Reading:

1. 1 ASP.NET Black BOOK Published By Dreamtech Press
2. ASP.NET UNLEASHED By STEPHEN WALTHER
3. MASTERING ASP.NET WITH VB.NET by A. RUSSELL JONES



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Paper – 307 Practical

Total Marks: 100

Practical exercises of following theory papers are to be carried out by the students:

Title of the paper	Marks	Total Practical Hours
Java Programming (BCA303)	30	54
RDBMS-II (BCA305)	40	72
Web Application Development Using ASP.Net (BCA306)	30	54
Total	100	180