



# MAHARAJA KRISHNAKUMARSINHJI BHAVNAGAR UNIVERSITY

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

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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	<b>Introduction</b> <ul style="list-style-type: none"><li>History of Unix Operating System Definition of Kernel, Shell, File, Process, System Calls.,</li><li>Linux Operating System, Features of Unix and Linux Operating System,</li><li>Concept of Open source software, Application area of Linux Operating System</li><li>Various Linux Flavors</li><li>Desktop Environment : (a) X Window Basics (b) KDE Basics (c) GNOME Basics</li><li>Terms and condition of Copying, Distribution, and Modifications (Linux &amp; GNU)</li><li>Advantages and Disadvantages of Linux</li></ul>	20
Unit – 2	<b>File Structure and Linux Shells.</b> <ul style="list-style-type: none"><li>Understanding File system hierarchy standard.</li><li>Directory Commands</li><li>File and Directory commands:</li><li>Understanding Job (process).</li><li>Process Commands:</li><li>User commands:</li><li>Misc Commands</li><li>Keyboard commands using ctrl key.</li></ul>	20
Unit – 3	<b>User Management</b> <ul style="list-style-type: none"><li>GUI user management tools: User admin and KUser</li><li>Password file, Managing user environment</li><li>Adding and removing users with useradd, usermod and userdel</li><li>Managing groups, Controlling access to directories and file using chmod</li></ul>	20
Unit – 4	<b>Networking concepts &amp; Server configuration</b> <ul style="list-style-type: none"><li>Basics of network system, Basics of TCP/IP Networking, IP address, IP address class and mask, port number, DNS, NFS server configuration</li><li>Telnet and FTP server fundamentals</li><li>Basics of Samba server: Installation and configuration.</li></ul>	20
Unit -5	<b>Bash Shell Programming</b> <ul style="list-style-type: none"><li>Introduction to Vi Editors</li><li>Introduction to Shell : Korn, Bash, and C Shell with their difference</li><li>Variables in shell, how to print or access values in shell, echo command.</li><li>Shell arithmetic, commands and command line arguments, I/O redirection</li><li>Structured language construct: if, else, else – if, case statement, loops in shell, Arrays, Command line argument.</li></ul>	20

Reference / Text-Books / Additional Reading:

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



T.Y. B.C.A.

Paper – 302 Data Communication and Networking

Total Marks: 100

Unit	Detail topic	Marks
Unit-1	<b><u>Introduction &amp; Transmission Media</u></b> <ul style="list-style-type: none"><li>♣ Overview Computer Network</li><li>♣ Communication system &amp; channel</li><li>♣ Analog and Digital Data</li><li>♣ Multiplexing</li><li>♣ Twisted pair wire, Coaxial cable</li><li>♣ Radio, VHF, Microwave, Infrared- Millimeter waves, fiber optic</li></ul>	20
Unit-2	<b><u>Data Communication &amp; Satellite Communication</u></b> <ul style="list-style-type: none"><li>♣ Basics of data link layer - framing, error control and flow control</li><li>♣ Error detecting codes</li><li>♣ Data link protocols - Unrestricted Simplex protocol, Simplex stop and wait protocol, Simplex protocol for noisy channel</li><li>♣ Optical source, Propagation in fiber, light detector</li><li>♣ Satellite link, Satellite communication, FDDI</li></ul>	20
Unit-3	<b><u>Data Network and Data communication system</u></b> <ul style="list-style-type: none"><li>♣ Switching techniques, digital telephony</li><li>♣ Routing Algorithms –shortest path routing, flooding, broadcast routing, multicast routing, ISDN</li><li>♣ PABX, Facsimile(Fax)</li></ul>	20
Unit-4	<b><u>Network Topology Architecture and Standard</u></b> <ul style="list-style-type: none"><li>♣ LAN , MAN, WAN and Network topology</li><li>♣ OSI Model, TCP/IP-Reference model</li><li>♣ IP Protocol, IP packet format, IP addressing.</li><li>♣ Ethernet, token bus, Token ring, Fast Ethernet</li><li>♣ Blue Tooth Overview, IEEE standard 802 for LAN &amp; WAN</li><li>♣ Tunneling and routing</li></ul>	20
Unit-5	<b><u>Network protocol and Security</u></b> <ul style="list-style-type: none"><li>♣ DLP, X.25, ATM, TCP/IP</li><li>♣ Elementary data link protocols</li><li>♣ Sliding window protocol</li><li>♣ Network security and cryptography, Public key algorithms</li><li>♣ DNS (Domain Name system), E-Mail, Virtual Private network</li><li>♣ Firewall, Internetworks, Basics of Repeaters, Hubs, Bridges, Switches, Routers, Gate Ways, Repeater, modem, hub, switches</li></ul>	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	<b>Fundamentals of Java Programming</b> <ul style="list-style-type: none"><li>♣ History of Java, Basic OOP Concepts – Abstraction, Encapsulation, Inheritance, Polymorphism</li><li>♣ Java Language Basics – Benefits, Applications, Byte Code, Buzzwords</li><li>♣ Data types, Variables, Arrays</li><li>♣ Operators, Control Statements, Command Line Arguments</li><li>♣ Classes and Objects</li></ul>	20
Unit-2	<b>Programming in Java</b> <ul style="list-style-type: none"><li>♣ Inheritance</li><li>♣ Packages</li><li>♣ Interfaces</li><li>♣ Exception Handling</li><li>♣ Multi Threading</li></ul>	20
Unit-3	<b>Strings, Characters and I/O in Java</b> <ul style="list-style-type: none"><li>♣ String Class and its methods, String Buffer Class and its methods</li><li>♣ Reading and Writing to console</li><li>♣ Reading and Writing to Files (As Characters and Byte Streams)</li><li>♣ Random Access File</li><li>♣ Serialization</li></ul>	20
Unit-4	<b>Java applet programming and Event Handling</b> <ul style="list-style-type: none"><li>♣ Types of Applets, Applet Architecture</li><li>♣ An Applet Skeleton</li><li>♣ Simple Applet Display Methods, Passing Parameters to Applets</li><li>♣ Event Handling Mechanisms</li><li>♣ The Delegation Event Model, Event Classes</li></ul>	20
Unit-5	<b>AWT – Working with Windows, Graphics, Text and Controls</b> <ul style="list-style-type: none"><li>♣ AWT Classes</li><li>♣ Windows Fundamental</li><li>♣ Frame Windows, Frame Window in Applet</li><li>♣ Graphics, color, Text output Using Font Metrics</li><li>♣ Controls – Labels, Button, Check Box, Scroll bar, Text field and Text area</li></ul>	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



T.Y. B.C.A.

Paper – 304 Operational Research:

Total Marks: 100

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



T.Y. B.C.A.

Paper – 305 RDBMS – II

Total Marks: 100

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



T.Y. B.C.A.

Paper – 306 Web Application Development Using ASP.Net

Total Marks: 100

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



**T.Y. B.C.A.**

**Paper – 307 Practical**

**Total Marks: 100**

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

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