



Vitthalbhai Patel & Rajratna P. T. Patel Science College (Autonomous)

(Reaccredited with 'A' Grade by NAAC (CGPA 3.14))

Affiliated to SARDAR PATEL UNIVERSITY Vallabh Vidyanagar, Gujarat

Syllabus effective from the Academic Year 2026-2027



Course Structure under NEP - 2020

BCA Semester-I

PROGRAMME SPECIFIC OBJECTIVE:

The objective of the BCA programme is to prepare students for a career in software design, development and testing as well as IT support by training them in the core and emerging areas of computer applications.

Subject		Subject Code	Subject Title	Theory/ Practical	Credits	Weekly Contact Hours	Exam Duration	Marking Scheme		
								Internal	External	Total
Discipline Specific Course Core(Major)	Core Course-1	UAS1MABCA01	Programming Fundamentals Using C	T	4	4	2:30	50	50	100
	Practical of Core Course-1	UAS1MABCA02	Programming Fundamentals Using C Lab	P	4	8	3	50	50	100
Minor	Minor Course-1	UAS1MIBCA03	Web Application Development – I	T	2	2	1:30	25	25	50
	Practical of Minor Course-1	UAS1MIBCA04	Web Application Development – I Lab	P	2	4	2	25	25	50
Interdisciplinary	Interdisciplinary Course-1	UAS1IDBCA05	Office Automation	T	2	2	1:30	25	25	50
	Practical of Interdisciplinary Course-1	UAS1IDBCA06	Office Automation Lab	P	2	4	2	25	25	50
Ability Enhance- ment Course		UAS1AEBCA07	Communication Skills in English-I	P	2	2	2	25	25	50
IKS/Value- Added Course		UAS1IKBCA08	Indian Knowledge System	T	2	2	1:30	25	25	50
Skill Enhancement Course/Internshi p/Dissertation		UAS1SEBCA09	Fundamentals of Computer Organization	T	2	2	1:30	25	25	50
Minimum Qualifying Credits				22						



BCA (Bachelor of Computer Applications)

BCA (Semester-I)

Course Code	UAS1MABCA01	Title of the Course	Programming Fundamentals Using C
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	1. To provide basic understanding of problem solving using algorithms and flowcharts. 2. To impart knowledge on fundamental concepts of the C Programming language.
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Course Content		
Unit	Description	Weightage* (%)
1.	Concept of Algorithm, Flowchart and Languages – Concept of an algorithm and a flow chart, need and definition – Symbols used to draw a flow chart – Typical examples of flow charts and algorithms – Generations of computer languages – High-level and low-level languages – Translators – Introduction to editors and details about one of the editors	25
2.	Basics of Programming – History and importance of C – Basic structure of a C Program – Variables and Constants – Data types in C – User defined type declaration - typedef – Operators and Expressions, type conversion – Formatted I/O statements, Assignment statements	25
3.	Decision Making, Loops and Arrays – Decision making and branching Statements – Decision making and looping statements – Arrays	25



4.	Strings and Library Functions – Introduction – Declaring and initializing strings – Operations on Characters – String handling functions – Common standard library functions	25
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Teaching-Learning Methodology	Multiple teaching approaches: lecture and discussion, exploration and inquiry, cooperative group work, demonstrations, and presentations.
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	solve problems using algorithms and flowcharts.
2.	develop simple programs using the C Programming language.

Suggested References:	
Sr. No.	References
1.	E. Balagurusami: Programming in ANSI C., Eighth Edition, Tata McGraw Hill Publication, 2019.
2.	Kernighan B., Ritchie D.: The C Programming Language, Prentice Hall, 1988.
3.	Cooper H. & Mullish H: The Spirit of C, Jaico Publication House, New Delhi, 1988.



BCA (Bachelor of Computer Application)

BCA (Semester-I)

Course Code	US1MABCA02	Title of the Course	Programming Fundamentals Using C Lab
Total Credits of the Course	4	Hours per Week	8

Course Objectives:	1. To impart knowledge to design algorithms and flowcharts. 2. To impart skill to solve simple programming problems.
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Course Content		
	Description	Weightage* (%)
	Part-1 Practical Based on US1MABCA01 (Unit-1 & Unit-2)	50%
	Part-2 Practical Based on US1MABCA01 (Unit-3 & Unit-4)	50%

Teaching-Learning Methodology	Hands on training through required ICT tools.
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	-
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	-
3.	University Examination	100%

Course Outcomes: Having completed this course, the learner will be able to	
1.	design algorithms and flowcharts.
2.	solve simple programming problems in C.



BCA (Bachelor of Computer Applications)

BCA (Semester-I)

Course Code	UAS1MIBCA03	Title of the Course	Web Application Development – I
Total Credits of the Course	2	Hours per Week	2

Course Objectives:	* To impart the knowledge of the Internet, WWW and HTML5.
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Course Content		
Unit	Description	Weightage* (%)
1.	Web Page Designing - I – Introduction to Internet, Services provided by the Internet (eMail, HTTP, FTP, Telnet, WWW), – Some basic terminology and concepts (URL, webpage, web site, web servers, web browser, search engines), – An Introduction to HTML, HTML tags, Structure of an HTML document, – Text and paragraph formatting, Ordered and Unordered lists Hyperlinks, Image	50
2.	Web Page Designing - II – HTML tables, – Frames, Framesets, – Designing HTML forms, – Advanced Elements of HTML5: !Doctype, meta, Input Controls (number, date, time, calendar, ranges), – Multimedia tags (<audio>, <video>)	50

Teaching-Learning Methodology	Material for this course will be presented using multiple teaching approaches: lecture and discussion, exploration and inquiry, cooperative group work, demonstrations, and presentations
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	have knowledge of Internet and WWW.
2.	Develop Web pages using HTML5, DHTML

Suggested References:	
Sr. No.	References
1.	Ivan Bayross, Web Enabled Commercial Applications Development using HTML, DHTML, Javascript, Perl CGI, BPB, 2004.
2.	Douglas E Comer: The Internet, PHI, Second Edition, May 2000.
3.	Xavier C: World Wide Web Design with HTML, Tata McGraw Hill Publication, 2000.
4.	Eric Meyer: Cascading Style Sheets – The Definitive Guide, O'Reilly – SPD, First Edition, 2000.
5.	Jeremy Keith, HTML 5 for Web Designers , A BOOK APART, 2010.
6.	Manuals of suitable packages.
7.	Fai theWempen , Step by Step HTML5, PHI, 2011.
8.	Thomas A. Powell, HTML& CSS: The Complete Reference, Fifth Edition, Tata McGraw-Hill, 2010.



BCA (Bachelor of Computer Applications)

BCA (Semester-I)

Course Code	UAS1MIBCA04	Title of the Course	Web Application Development-I Lab
Total Credits of the Course	2	Hours per Week	4

Course Objectives:	To provide knowledge of HTML and DHTML
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Course Content		
	Description	Weightage* (%)
	Practical Based on Web Application Development – I	100%

Teaching-Learning Methodology	Hands on training through required ICT tools.
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	-
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	-
3.	University Examination	100%

Course Outcomes: Having completed this course, the learner will be able to	
1.	design and Develop web pages using HTML



BCA (Bachelor of Computer Applications)

BCA (Semester-I)

Course Code	UAS1IDBCA05	Title of the Course	Office Automation
Total Credits of the Course	2	Hours per Week	2

Course Objectives:	To introduce students to • Conceptual Framework of Spreadsheets • Features of word processing, presentation tool.
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Course Content		
Unit	Description	Weightage* (%)
1.	Conceptual Framework of Spreadsheets – Introduction to Spreadsheets and Spreadsheet packages – Building spreadsheets using formulas, conditional calculations – Built-in functions – Database utilities: sorting, filtering, extracting – Creating charts – Data visualization best practices: choosing the right chart, formatting, and styling – Analyze Data Using PivotTables and Pivot Charts – Lookup and reference functions -Vlookup, Hlookup	50
2	Word Processing & Presentation Tool – Introduction to word processing software, benefits of word processing software, examples of word processors – Working with documents: Basic operations, formatting text & paragraphs, using tables, shapes, inserting pictures, mail merge facility – Introduction to presentation tools and their basic features – Working with presentation slides : creating, editing, formatting and previewing, inserting picture, clipart, shapes and chart, adding header, footer, animations and slide transitions, printing slide content	50



Teaching-Learning Methodology	Material for this course will be presented using multiple teaching approaches: lecture and discussion, exploration and inquiry, cooperative group work, demonstrations, and presentations
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	understand the concept of Conceptual Framework of spreadsheets.
2.	understand features of word processing, presentation tool.

Suggested References:	
Sr. No.	References
1.	Manuals of PC software.
2.	Taxali R K : PC Software made simple for Windows, Tata McGraw-Hill Publishing Co. Ltd., 2000.
3.	J. C. Gandhi :Marketing : A managerial Introduction Tata McGraw Hill Publishing CO. Ltd. New Delhi, 1989.



BCA (Bachelor of Computer Applications)

BCA (Semester-I)

Course Code	UAS1IDBCA06	Title of the Course	Office Automation Lab
Total Credits of the Course	2	Hours per Week	4

Course Objectives:	To enable students to work with Word documents, Excel sheets and power point presentations.
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Course Content		
	Description	Weightage* (%)
	Practical Based on Office Applications	100%

Teaching-Learning Methodology	Hands on training through required ICT tools.
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	
3.	University Examination	100%

Course Outcomes: Having completed this course, the learner will be able to	
1.	work with Word documents, Excel sheets and create power point presentations.



BCA (Bachelor of Computer Applications)

BCA (Semester-I)

Course Code	UAS1AEBCA07	Title of the Course	Communication Skills in English - I
Total Credits of the Course	2	Hours per Week	2

Course Objectives:	1. Introduce themselves, describe person, place or situation 2. Structure sentences for variety of purposes 3. Make or respond to enquiries; raise queries as and when required 4. Write letters for specific purposes 5. Use modal auxiliaries efficaciously 6. Communicate in Active and Passive Voice precisely
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Course Content		
Unit	Description	Weightage*(%)
1.	Reading Skills, Listening & Feedback Skills, Forming Words – Mechanics of Reading i.e. Eye Movement and Different Reading Styles – Issues of Reading Speed and Comprehension Value – Reading Gears for different reading purposes – Skimming & Scanning Skills – Barriers to Effective Reading – Importance and purpose of Listening. – Barriers to Effective Listening. – Ways of improving Listening Skills. – Giving Feedbacks i.e Confirmatory and Corrective – Form words properly using prefixes/suffixes (See the Appendix) – Use Phrasal Verbs (See the Appendix) – Writing formal letters of invitation (inviting/accepting/declining), letters of complaint and intimation to civil authorities.	50
2.	Writing Skills & Speaking Skills – Paragraph development i.e. Topics sentence and supporting sentence, attributes of a good paragraph, types of paragraphs. Writing dialogue on given topics – Use greeting and formulae in everyday conversation – Notions and Functions of everyday usage – Parts of Speech, Types of Sentences, Tenses, Imperatives, Modals,	50



	Voice, Determiners, Concord, Interrogation and Negation, basic prepositions Use of Phrasal Verbs Constructions and Registers. – Connectives and Linkages	
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Teaching-Learning Methodology	Role Play, Discussion and Debate, Think Pair Share, Traditional classroom teaching as well as usage of ICT tools.
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	-
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	-
3.	University Examination	100%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Introduce themselves, describe person, place or situation.
2.	Structure sentences for variety of purposes.
3.	Make or respond to enquiries; raise queries as and when required.
4.	Write letters for specific purposes.
5.	Use modal auxiliaries efficaciously.
6.	Communicate in Active and Passive Voice precisely.



Suggested References:

Sr. No.	References
1.	Meenakshi Raman & Sangita Sharma, Technical Communication; Principles and Practice, Oxford University Press.
2.	Chrissie Wright, Communication Skills, Jaico Publication.
3.	Grant Taylor, English Conversation Practice, New Delhi: Tata McGraw Hill.
4.	R P Bhatanagar and R T Bell, Communication in English, Hyderabad, Orient Longman.
5.	D Sasikumar and P V Dhamija, Spoken English, New Delhi: Tata McGraw Hill.
6.	M. Farhathullah, Communication Skills for Technical Students.
7.	Champa Tickoo and Jaya Sasikumar, Writing with a Purpose, Chennai, OUP.
8.	David Jolly, Writing Tasks: Authentic task approach to individual Writing needs, Cambridge University Press.



BCA (Bachelor of Computer Applications)

BCA (Semester-I)

Course Code	UAS1IKBCA08	Title of the Course	Indian Knowledge Systems
Total Credits of the Course	2	Hours per Week	2

Course Objectives:	The course will enable the student teachers to • Examine the concept of Bhartiya concept of spirituality and its various paths. • Examine the Bhartiya philosophy of life derived from Shashtras (ancient scriptures) and its implications for the Bhartiya lifestyle. • Analyse the concept of Indian Knowledge Systems (IKS) and emphasize its importance in preserving and disseminating indigenous knowledge. • Highlight the contributions of IKS to the world, particularly in the fields of mathematics and astronomy. • Explore the Bhartiya wisdom related to life sciences. • Study the science of architecture in ancient India with reference to significant sites. • Provide an overview of Ayurveda, including its concepts, branches, important books, and pioneers in the field. • Explore Bhartiya literature and the Bhartiya theory of aesthetics and rasa in various art forms.
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Course Content		
Unit	Description	Weightage* (%)
1	Spiritual Bharat and Introduction to IKS • Bhartiya Concept of Spirituality : Gyaan Marg, Bhakti Marg, Karm marg, Yog Marg • Bhartiya Spiritual Thinking Leading to Unity • Bhartiya Philosophy of Life Derived from Shashtras and its Implications for Bhartiya Life Style • Introduction to IKS and Its Importance • Introduction of Various Indian Knowledge Systems	50 %
2	Contribution of IKS to the World • Bhartiya Contribution in Mathematics and Astronomy • Bhartiya Wisdom related to Life Science: Physics, Chemistry, Botany • Bhartiya Science of Architecture with reference to Lothal,	50 %



	Mohan Jo Daro, Dholavira, Temple Architecture - Ayurveda : Concept, Branches, Books and Pioneers - Bhartiya Literature and Bhartiya Theory of Aesthetics and Rasa	
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Teaching-Learning Methodology	Lecture-cum-discussion, Group Discussion, Presentations, Seminars, tutorials, Research Exercises
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination Internal Continuous Assessment in the form of Practical, Vivavoce, Quizzes, Seminars, Assignments, Attendance	30%
2.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Understand the diverse paths of spirituality in Bhartiya culture, including Gyaan Marg, Bhakti Marg, Karm Marg, and Yog Marg, and recognize their significance in individual and collective spiritual growth.
2.	Evaluate the Bhartiya philosophy of life derived from Shashtras and analyze its implications for contemporary Bhartiya lifestyles, fostering a deeper understanding of the connection between spirituality and everyday life.
3.	Explain the concept of Indian Knowledge Systems (IKS) and recognize its importance in preserving and promoting indigenous knowledge, fostering a sense of cultural identity and pride.
4.	Demonstrate knowledge of various Indian knowledge systems, such as Ayurveda, Vedic sciences, Yoga, Vedanta, and Jyotish, and appreciate their contributions to human knowledge and well-being.
5.	Recognize and appreciate the significant contributions of IKS to the world, particularly in the fields of mathematics and astronomy, and understand their impact on modern scientific advancements.
6.	Analyze the Bhartiya wisdom related to life sciences, including physics, chemistry, and botany, as described in ancient texts, and understand their relevance and potential applications in contemporary scientific research.



7

Identify and analyze the unique architectural features and principles of ancient Indian sites like Lothal, Mohenjo-daro, Dholavira, and temple architecture, understanding their cultural, historical, and spiritual significance.

Suggested References:

- જયેન્ દવે . (૧૯૮૬). ભારતીય ઇતિહાસકોષ્ટકું િશ્વ ઇતિહાસ. અમદાવાદ: ડુનીવર્સિટી ગ્રંથાલય
- ડુગલ કશોર શર્મા. (૨૦૦૦). ડુણ્યયિમ ભારત. ફારવતી: સાધના ડુસતક પકાશન
- સવામી વિદ્યાતાતમાનાન્દ (૧૯૮૪). ભારતને ઓળખીએ. અમદાવાદ: રાજાચેબલ પબ્લીકેશન
- Radhakrishnan, S. (1992). The Hindu View of Life. HarperCollins Publishers.
- Singh, A. P., & Yagnik, S. (Eds.). (2019). Indian Knowledge Systems: Understanding the Human Uniqueness. Springer.
- Frawley, D., & Ranade, S. (2001). Ayurveda, Nature's Medicine. Lotus Press.
- Lad, V., & Frawley, D. (1986). The Yoga of Herbs: An Ayurvedic Guide to Herbal Medicine. Lotus Press.
- Dasgupta, S. (1947). A History of Indian Philosophy. Cambridge University Press.
- Pollock, S. (2006). The Language of the Gods in the World of Men: Sanskrit, Culture, and Power in Premodern India. University of California Press.
- Sarma, K. V. (2008). Indian Astronomy: A Source-Based Approach. National Council of Education Research and Training.
- Narlikar, J. V., & Padmanabhan, T. (Eds.). (2016). Development of Physics in India. Springer.
- Mahdihassan, S. (1982). Ancient Indian Botany: Its Bearing on Art and Literature. Deccan College Post-Graduate and Research Institute.

Online References :

- Indian Knowledge Systems Vol 1 <https://iks.iitgn.ac.in/wp-content/uploads/2016/01/Indian-Knowledge-Systems-Kapil-Kapoor.pdf>
- <http://www.indianscience.org/index.html>
- Traditional Knowledge Systems of India <https://www.sanskritimagazine.com/india/traditional-knowledge-systems-of-india/>
- <https://orientviews.wordpress.com/2013/08/21/how-colonial-india-destroyed-traditional-knowledge-systems/>
- <https://www.thebetterindia.com/63119/ancient-india-science-technology/>
- <https://orientviews.wordpress.com/2013/08/21/how-colonial-india-destroyed-traditional-knowledge-systems/>



BCA (Bachelor of Computer Applications)

BCA (Semester-I)

Course Code	UAS1SEBCA09	Title of the Course	Fundamentals of Computer Organization
Total Credits of the Course	2	Hours per Week	2

Course Objectives:	1. To provide basic understanding of logical organization and architecture of a computer. 2. To introduce fundamental concepts related to number systems and representation of information.
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Course Content		
Unit	Description	Weightage* (%)
1.	Introduction to Computer Systems, Number Systems, Representation of Information and Processor Organization – Block diagram of a simple computer and significance of different functional units – Definitions of the terms: hardware, software – Binary, octal, decimal, and hexadecimal number systems – Conversion of numbers : binary to decimal and decimal to binary – Addition and subtraction of binary numbers – Representation of integers – Character codes (ASCII, Unicode) – Instruction execution cycle – CPU organization – Array processors	50
2.	Memory Organization, Addressing Techniques and I/O Devices – Primary memory: Introduction to RAM and ROM, Cache, Registers – Secondary memory: Various types and organization of secondary storage devices such as magnetic disks, optical disks, flash memories – Addressing techniques like Immediate, Direct, Indirect, Register, Indexing and Stack – Common types of Input/Output devices, such as Monitors, keyboard, mouse, Printers (Line, Dot Matrix, Inkjet, Laser), Scanners	50



Teaching-Learning Methodology	Multiple teaching approaches: lecture and discussion, exploration and inquiry, cooperative group work, demonstrations, and presentations
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	-
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	-
3.	University Examination	100%

Course Outcomes: Having completed this course, the learner will be able to	
1.	understand the fundamental concepts related to organization of a computer system.
2.	understand the fundamental concepts related to number systems and representation of information.

Suggested References:	
Sr. No.	References
1.	Tanenbaum A.S., Structured Computer Organization, Prentice-Hall of India Pvt. Ltd, 5 th edition, 2005.
2.	Rajaraman V, Computer Fundamentals, Prentice-Hall of India Pvt. Ltd.(4 th Edition), 2003.
3.	P.K. Sinha, Priti Sinha, Computer Fundamentals, 6 th Edition, 2003.
