☎080-26674441,26605199

THE NATIONAL COLLEGE BASAVANAGUDI, BANGALORE
AUTONOMOUS

DEPARTMENT OF COMPUTER SCIENCE

BCA
SYLLABUS

BCA Course Matrix

I Semester BCA							
Part	**Paper**	**Title**	**Hours**	**Marks**			**Credits**
				IA	**Exam**	**Total**	
Part-1	LK/S/H B1	Language(Kannada/Sanskrit/Hindi)	4	30	70	100	2
	LE B1	Language English-I	4	30	70	100	2
Part-2	1BC-1T	Mathematical Foundation for Computer Applications	4	30	70	100	4
	1BC-1T	Fundamentals of Accounting	4	30	70	100	4
	1BC-3T	Programming in C	4	30	70	100	4
	1BC-4T	Computer Organization and Architecture	4	30	70	100	4
	1BC-5P	Programming in C Lab	3	15	35	50	1
	1BC-6P	Computer Application Lab	3	15	35	50	1
Total Marks & Credits				**240**	**560**	**800**	**25**

II Semester BCA							
Part	**Paper**	**Title**	**Hours**	**Marks**			**Credits**
				IA	**Exam**	**Total**	
Part-1	LK/S/H B2	Language(Kannada/Sanskrit/Hindi)	4	30	70	100	2
	LE B2	Language English-II	4	30	70	100	2
Part-2	2BC-1T	Numerical and Statistical Methods	4	30	70	100	4
	2BC-2T	Data Structures Using C	4	30	70	100	4
	2BC-3T	Object Oriented Programming Using C++	4	30	70	100	4
	2BC-4T	Operating System	4	30	70	100	4
	2BC-5P	Data Structure Lab Using C	3	15	35	50	1
	2BC-6P	C++ Lab	3	15	35	50	1
Part-3	MC1	Indian Constitution & Human Right	2	15	35	50	1
Total Marks & Credits				**240**	**560**	**800**	**25**

III Semester BCA							
Part	**Paper**	**Title**	**Hours**	**Marks**			**Credits**
				IA	**Exam**	**Total**	
Part-1	LK/S/H B3	Language(Kannada/Sanskrit/Hindi)	4	30	70	100	2
	LE B3	Language English-III	4	30	70	100	2
Part-2	3BC-1T	Computer Graphics	4	30	70	100	4
	3BC-2T	Unix Operating System	4	30	70	100	4
	3BC-3T	Database Management Systems	4	30	70	100	4
	3BC-4T	VB.Net Programming	4	30	70	100	4
	3BC-5P	Unix Lab	3	15	35	50	1
	3BC-6P	VB.Net and SQL Lab	3	15	35	50	1
	3BC-7P	Computer Graphics Lab	3	15	35	50	1
Part-3	MC2	Human Resource Management	2	15	35	50	2
	OE	Open to the students of Other Disciplines	2	15	35	50	1
		Total Marks & Credits		**270**	**630**	**900**	**28**

IV Semester BCA							
Part	**Paper**	**Title**	**Hours**	**Marks**			**Credits**
				IA	**Exam**	**Total**	
Part-1	**LK/S/H B4**	Language(Kannada/Sanskrit/Hindi)	**4**	**30**	**70**	**100**	**2**
	LE B4	Language English-IV	**4**	**30**	**70**	**100**	**2**
Part-2	4BC-1T	Design and Analysis of Algorithms	**4**	**30**	**70**	**100**	**4**
	4BC-2T	Python	**4**	**30**	**70**	**100**	**4**
	4BC-3T	Software Engineering	**4**	**30**	**70**	**100**	**4**
	4BC-4T	Core Java	**4**	**30**	**70**	**100**	**4**
	4BC-5P	Python Lab	**3**	**15**	**35**	**50**	**1**
	4BC-6P	Core Java Lab	**3**	**15**	**35**	**50**	**1**
	4BC-7P	Mini Project	**3**	**15**	**35**	**50**	**1**
Part-3	MC3	Value Education	**2**	**15**	**35**	**50**	**2**
	SD	Skill Development	**2**	**15**	**35**	**50**	**1**
		Total Marks & Credits		**270**	**630**	**900**	**28**

V Semester BCA

Part	Paper	Title	Hours	Marks			Credits
				IA	Exam	Total	
Part-2	5BC-1T	Internet Technologies	4	30	70	100	4
	5BC-2T	Artificial Intelligence	4	30	70	100	4
	5BC-3T	Computer Networks	4	30	70	100	4
	5BC-4T	Web Application Development	4	30	70	100	4
	5BC-5T	Cloud Computing	4	30	70	100	4
	5BC-6P	Internet Technologies Lab	3	15	35	50	1
	5BC-7P	Web Application Development Lab	3	15	35	50	1
	5BC-8P	Simulation Project Lab	3	15	35	50	1
Part-3	MC4	Communicative English	2	15	35	50	1
		Total Marks & Credits		225	525	750	26

VI Semester BCA

Part	Paper	Title	Hours	Marks			Credits
				IA	Exam	Total	
Part-2	6BC-1T	TCP/IP	4	30	70	100	4
	6BC-2T	Network Security	4	30	70	100	4
	6BC-3T	Mobile Computing and Wireless Technologies	4	30	70	100	4
	6BC-4T	Object Oriented Analysis and Design	4	30	70	100	4
	6BC-5T	Business Analytics	4	30	70	100	4
	6BC-6P	Business Analytics Lab	3	15	35	50	1
	6BC-7P	Project Work	6	30	70	100	2
Part-3	MC5	Environmental Science	2	15	35	50	1
		Total Marks & Credits		**225**	**525**	**750**	**26**

FIRST SEMESTER BCA

Syllabus

I Semester BCA							
Part	**Paper**	**Title**	**Hours**	**Marks**			**Credits**
				IA	**Exam**	**Total**	
Part-1	LK/S/H B1	Language(Kannada/Sanskrit/Hindi)	4	30	70	100	2
	LE B1	Language English-I	4	30	70	100	2
Part-2	1BC-1T	Mathematical Foundation for Computer Applications	4	30	70	100	4
	1BC-1T	Fundamentals of Accounting	4	30	70	100	4
	1BC-3T	Programming in C	4	30	70	100	4
	1BC-4T	Computer Organization and Architecture	4	30	70	100	4
	1BC-5P	Programming in C Lab	3	15	35	50	1
	1BC-6P	Computer Application Lab	3	15	35	50	1
Total Marks & Credits				**240**	**560**	**800**	**25**

LS-B1 : Sanskrit Paper-1- Epic Poetry and Prose

Unit-I

Select portions from Vedas, Upanishads, Epic Poetry, Classical Poetry,and Prose (Total of 20 units)

Unit - II

History of Sanskrit Literature, Veda, UpaniShads, Puranas, Classical Poetry,

Unit - III

Functions: Function Definition, prototyping, types of functions, passing arguments to functions, Nested Functions, Recursive functions.

Unit-IV

Translation of Unseen passage from Sanskrit to English/Kannada

Unit-V

Grammar Exercise from unseen passage (Subanta-Tinganta-Avyaya)

Internal Assessment
(75%Attendance/ Min. 2-Assignments/ 2-Tests)

Total Marks 100 Marks

Teaching hours per week 04 hours

LH-B1 : Hindi : "गद्यामृत"

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

युनिट - १ : सती। **9 Hours**

लेखिकाशिवानीबाकीतीनमहिलाओंकाचरित्र,

एकमहाराष्टीदूसरीपंजाबीऔरतीसरीमादलसाओंकापरिचय।कथाकाविवरण।

युनिट-२ : कवितासबसेसुंदरसपनाहै। **9 Hours**

लेखकडॉ. ए.

अविन्दाक्षनकापरिचय।कवितानिर्माणहोनेकेसाहित्यकऔरविवरणात्मकपरिचय।

युनिट-३ : मदरतेरेसा। **9 Hours**

लेखिकाआशारानीव्होराकीपरिचय।मदरतेरेसाकेजीवनवृत्तांतकापरिचय।

युनिट-४ : यादोंमेंउभरताइंन्द्रप्रस्थ। **9 Hours**

लेखकमहेश्वरदयालदुबेकापरिचय।नईदिल्लीकेइतिहासकाविवरण।

युनिट-५ : खुशामद। **9 Hours**

लेखकप्रभाकरमाचवेकापरिचय।खुशामदकेतरीकोपरव्यंग्यात्मकविवरण।

निट - ६ : रचना। **9 Hours**

वैज्ञानिकशब्दावलीऔरअनुच्छेदलेखनकाविवरण।

TEXT BOOKS

1."गद्यामृत"संपादकडॉ.एस.सीहिरेमठऔरडॉ.
एन.मंजुला।प्रकाशकऔरमुद्रकःप्रसारंगबेंगलूरुविश्वविद्याल्य, बंेगलूरु।

REFERENCE BOOKS

1. हिन्दीव्याकरणप्रबोधएवंरचना।संपादक डॉ. विजयपालसिंह।प्रकाशकऔरमुद्रक : समग्रविकासप्रकाशन, इलाहबाद।

LK-B1 : KANNADA ಪ್ರಾಚೀನ ಕಾವ್ಯ ಮಾರ್ಗ

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Title: ಪ್ರಾಚೀನ ಕಾವ್ಯ ಮಾರ್ಗ	**Hours**
Language Kannada	
ಮೆಯ್ಗಳೆರಡಾದೊಡಮೇನ್ ಅಸು ಒಂದೆ–ಪಂಪ	6
ಲಕ್ಷ್ಮಿವಿಡಂಬನೆ–ರನ್ನ	6
ವಚನಗಳು–ಅಕ್ಕಮಹಾದೇವಿ, ಅಲ್ಲಮಪ್ರಭು	6
ಉತ್ತರ ಕುಮಾರನ ಪ್ರಸಂಗ–ಕುಮಾರವ್ಯಾಸ	6
ಕೀರ್ತನೆಗಳು–ಪುರಂದರದಾಸ ಮತ್ತು ಕನಕದಾಸ	6
ಕತೆಗಳು	
ಧನ್ವಂತರಿಯ ಚಿಕಿತ್ಸೆ–ಕುವೆಂಪು	5
ಎ ದಿಲ್ ಮಾಂಗೆ ಮೋರ್–ಅಮರೇಶ್ ನುಗುಡೋಣಿ	5
ಕುರುಡು ಕಾಂಚಾಣ–ಪಿ.ಲಂಕೇಶ್	5
ಪ್ರಜಾಪ್ರಭುತ್ವ ಮತ್ತು ಮೂರು ಮಂಗಗಳು–ಬೆಸಗರಹಳ್ಳಿ ರಾಮಣ್ಣ	5
ಚಪ್ಪಲಿಗಳು–ಸಾರಾಅಬೂಬಕರ್	4

LE-B1 : Language English

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I: Poetry **10 Hours**

1.The Mystic Drum-Gabriel Okara
2.To a Student- Kamala Wijeratne
3.The Second Coming-W.B.Yeats
4.Wind,9- Subramania Bharathi

Unit - II : Short Stories: **8 Hours**

1.The Happy Prince- Oscar Wilde
2. Once Upon A Time- Nadine Gordimer

Unit - III : Essays: **6 Hours**

1.Hind Swaraj-What Is Civilization? M.K.Gandhi
2.Everybody Loves A Good Draught-P. Sainath

Unit-IV : Language Skills: **24 Hours**

1. Comprehension
2. Note Making
3. Paragraph Writing
4. Advertisements

IBC-1T MATHEMATICS - I

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I: MATRIX THEORY. 6 Hours

Review of the fundamentals-Solution of linear equations by Cramer's rule and by Matrix method-Eigen values and Eigenvectors-Cayley-Hamilton theorem-Diagonalization of matrices.

Unit – II: ANALYTIC GEOMETRY IN THREE DIMENSIONS. 10 Hours

Direction cosines and Direction ratios-Distance formula-Section formula-problems-Equations to straight lines and planes-Angle between two straight lines-Equation to a sphere-right circular cone and cylinder.

Unit – III: DIFFERENTIAL CALCULUS. 10 Hours

Limits-Continuity-Differentiation of standard functions-Determination of the n^{th}-derivative of standard functions-Statements of Leibnitz, Euler, Rolle's and Taylor theorems-Partial differentiation-Problems.

Unit-IV : INTEGRATED CALCULUS. 10 Hours

Standard integrals of algebraic, logarithmic, exponential and trigonometric functions-Integration by parts-problems-Definite integrals.

Unit-V : ALGEBRAIC STRUCTURES. 8 Hours

Definition of a group-properties of groups-subgroups-Permutation groups-Scalars and vectors-Algebra of vectors-Scalars and vector products-Scalar and vector triple products.

Unit-VI: DIFFERENTIAL EQUATIONS. 10 Hours

Solutions of first order-first degree equations-variables separable-Homogenous and Non-homogenous-Exact equations-Linear and Bernoulli's equations-illustrative examples.

TEXT BOOKS

1. Grewal.B.S, Higher engineering Mathematics,36^{th} Edition
2. Srimani.P.K. and Vinayakmurthy.M., a Text book of Mathematical foundations for computer Science (for I BCA), 2001.
3. Srimani.P.K. and Vinayakmurthy.M., A Text book of Mathematics-BCA 101, BUB.2006

REFERENCE BOOKS

1. Sastry S.S. Engineering Mathematics,2000
2. Peter V.O'Neil, Advanced Engineering Mathematics,5^{th} Edition

IBC-2T FUNDAMENTALS OF ACCOUNTING

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I: OBJECTIVE.

The financial aspect of business and management will be taught to student through this subject. This will benefit student in understanding and analyzing financial statements of a business.

Unit – II: INTRODUCTION TO FINANCIAL ACCOUNTING. 12 Hours

Introduction –Book-keeping –Meaning, Objectives, Types and functions of Accounting-Book–keeping V/s Accounting –Users of accounting data –Branches of accounting –advantages and Limitations of accounting, Accounting Concepts and conventions:

Unit – III: ACCOUNTING PROCESS. 12 Hours

Classification of accounting transaction and accounts, rules of debit and credit as per Double Entry System. Journal–Meaning, features, format, process on journal entry.Ledger- Meaning, features ,format, posting to ledger, balancing of ledger accounts, subsidiary books -Preparation of different types subsidiary books: Purchase Book, Sales Book, Purchase returns Book, Sales returns Book problems-Trial balance, features-importance.(problems)

Unit-IV : CASH BOOK. 12 Hours

Meaning, features, Types of cash book: Simple cash book, double column cash book and three column cash book, petty cash book, Bank Reconciliation Statement: Meaning, Definition, Need, features of Bank Reconciliation Statement, Reasons for the difference between the cash book balance and pass book balance, preparation of Bank Reconciliation Statement (Simple problems)

Unit-V : PREPARATION OF TRIAL BALANCE AND FINAL ACCOUNTS OF SOLE PROPRIETOR. 12 Hours

Meaning, need and classification, Trading and Profit and Loss account and Balance Sheet (vertical format)

Unit-VI: COMPUTERIZED ACCOUNTING SYSTEM. 6 Hours

Meaning-Features-Manual and computerized accounting, merits and demerits of computerized accounting system, generating accounting reports

SKILL DEVELOPMENT:

- Collection of financial statements of any one organization for two years .
- Collecting the final accounts of a Public Limited Company and Commenting on the liquidityand profitability.

TEXT BOOKS

1. V.A.Patil and J.S.Korihalli, Book–Keeping and Accounting, (R. Chand and Co. Delhi). 2. R.S.Singhal, Principles of Accountancy, Nageen Prakash pvt.Ltd, Meerut.
3. B.S.Raman, Accountancy, (United Publishers, Mangalore)
4. Fundamentals of Accounting & Financial Analysis: By Anil Chowdhry (Pearson Education), 5. Financial accounting: By Jane Reimers (Pearson Education)

1BC-3T : Programming In C

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I **9 Hours**

Introduction to Programming Concepts: Software, Classification of Software, Modular Programming, Structured Programming, Algorithms and Flowcharts with examples. Overview of C Language: History of C, Character set, C tokens, Identifiers, Keywords, Data types, Variables, Constants, Symbolic Constants , Operators in C, Hierarchy of Operators, Expressions, Type Conversions and Library Functions.

Unit - II **9 Hours**

Managing Input and Output Operation: Formatted and Unformatted I/O Functions, Decision making, branching and looping: Decision Making Statements - if Statement, if–else statement, nesting of if-else statements, else–if ladder, switch statement,?: operator, Looping - while, do-while, for loop, Nested loop, break, continue, and goto statements.

Unit - III **9 Hours**

Functions: Function Definition, prototyping, types of functions, passing arguments to functions, Nested Functions, Recursive functions.

Unit-IV **9 Hours**

Arrays: Declaring and Initializing, One Dimensional Arrays, Two Dimensional Arrays, Multi Dimensional Arrays - Passing arrays to functions. Strings: Declaring and Initializing strings, Operations on strings, Arrays of strings, passing strings to functions. Storage Classes - Automatic, External, Static and Register Variables.

Unit-V **9 Hours**

Structures-Declaring and Initializing, Nested structure, Array of Structure, Passing Structures to functions, Unions, typedef, enum, Bit fields. Pointers – Declarations, Pointer arithmetic, Pointers and functions, Call by value, Call by reference, Pointers and Arrays, Arrays of Pointers, Pointers and Structures. Meaning of static and dynamic memory allocation, Memory allocation functions.

Unit-VI **9 Hours**

Files - File modes, File functions, and File operations, Text and Binary files, Command Line arguments. C Preprocessor directives, Macros – Definition, types of Macros, Creating and implementing user defined header files.

TEXT BOOKS

1. E. Balaguruswamy, “Programming In ANSI C”, 4th edition, TMH Publications, 2007
2. Ashok N. Kamthane, “Programming with ANSI and Turbo C”, Pearson Education, 2006

REFERENCE BOOKS

1.Ashok N. Kamthaneet. al., “Computer Programming and IT”, Pearson Education, 2011
2.Mahapatra, “ Thinking In C ”, PHI Publications, 1998.
3.YashwantKanetkar, “Let Us C”, 13th Edition, PHP, 2013.

1BC-4T: Computer organization and Architecture

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I **9 Hours**

Number System and Boolean algebra: Binary, octal, Hexadecimal Number systems, base conversions, signed binary numbers, binary arithmetic, subtraction using compliments, Binary codes, weighted-BCD-8421 code, Gray code, excess- 3 code, ASCII code.

Unit - II **9 Hours**

Boolean algebraand logic gates: Boolean laws, Demorgen's theorems, Minimization of Boolean expressions-using Boolean postulates and Karnaugh maps technique(sop).

AND, OR, NOT gate using Transistor NAND, NOR as universal gates : X-OR,X-NOR gates

Unit - III **9 Hours**

Combinational and logic circuits: Half adder, half subtractor, full adder, full subtractor, Multiplexer ,De-multiplexer, Encoder, Decoder, Flip-Flops: JK, T, D master slave JK flip flops Shift registers: SISO, SIPO, PISO, PIPO (block diagrams), and 4-bit SISO shift register using D-flip-flop. Counters: Synchronous and Asynchronous.

Unit-IV **9 Hours**

Basic computer organization and design : Introduction,Instruction codes, Computer registers, Computer instructions, timing and control, hard wired control,micro programmed control, execution and instruction, input output interrupt. Design of computer

Unit-V **9 Hours**

Central Processor Organization: processor bus organization, arithmetic logic unit (ALU),Instruction formats, Addressing modes, data transfer and manipulation, program control, microprocessor organization.

Unit-VI **9 Hours**

Input-output organization and memory organization: peripheral devices, asynchronous data transfer, directmemoryaccess,(DMA),priority

Interrupt, input output processor**,**Introduction, memory hierarchy, main memory, auxiliary memory, cache memory .

TEXT BOOKS

1. Digital Principles and applications by Malvino,albertpaul; Publisher Mcgraw hill, 1975.
2. Computer architecture by John. 5thedition ; publisher Morgan Kaufmann, 2011.

REFERENCE BOOKS

1. Digital computer electronics by Albert p .Malvino publisher Carrer Education,1992.
2. Basic Digital Electronics by Alvis.J.Evans; publisher master publishing ,1996.

1BC-5P: C Programming Lab

SECTION: A

1. Printing the reverse of an integer.
2. Generate first N prime numbers.
3. Get a string and convert the lowercase to uppercase and vice-versa without using library functions.
4. Find the occurrence of a particular character in a string.
5. Input a string and find the number of each of the vowels which appear in the string.
6. Accept N words and make it as a sentence by inserting blank spaces and a full stop at the end.
7. Print the reverse of a string.
8. Find the first N terms of Fibonacci series using arrays.
9. Declare 3 pointer variables to store a character, a character string and an integer respectively. Input values into these variables. Display the address and the contents of each variable.
10. Program to demonstrate structure and union.
11. Recursive program to find the factorial of an integer.
12. Finding the maximum of 4 numbers by defining a macro for the maximum of two numbers.

SECTION: B

11. Arranging N numbers in ascending and in descending order using bubble sort.
12. Checking whether the given matrix is an identity matrix or not.
13. Addition and subtraction of two matrices.
15. Multiplication of two matrices.
14. Convert a hexadecimal number into its binary equivalent.
16. Check whether the given string is a palindrome or not.
17. Demonstration of bitwise operations.
18. Applying linear search to a set of N numbers by using a function.
19. Create a sequential file with three fields: empno, empname, empbasic. Print all the details in a neat format by adding 500 to their basic salary.
20. Arrange N names in alphabetical order.
21. Arranging N numbers in ascending and in descending order using bubble sort.
22. Checking whether the given matrix is an identity matrix or not.

1BC-5P: Computer Application Lab

1 **Scenario:** You share a house with Your friend. You want to tell them how much electricity is being used and how to use less. You decide to gather information on ways of saving electricity.

NOTE:-All the data files required complete the below task are or stored in Computer folder

Questions on Excel

a To save money, your housemates want to know how much electricity each appliance in your house costs to run per week.
You have been given a file that shows the unit cost of running some of the appliances.

b The file needs to be updated to show the data for the cooker.

c It is used for 10 hours per week and the unit cost is 0.10.
Enter a formula so that the cost per week of using each appliance is shown.
Cost per week is weekly use multiplied by **unit cost**

d Create a chart showing the cost per week of using each appliance in descending order.
Make sure all the data is formatted correctly, clear and easy to read.

Questions on MS-Word

e Create a poster to put up in the house to remind everyone of the costs of using the appliances.

f Give the poster a title.
Select and use a suitable image from the ones you have been given.

g Include the chart you created in Task 3 and the 'five ways to save electricity' you found in Part A.
Make sure that the poster is clear and easy to read and free from errors.

h Make sure the files and folders you have used and those you have created are organized so they can be found easily.

2 **Scenario:** You are working with the owner of a sport shop called 'Sun, Sea and Surf' based in Bangalore. He has some stock from the shop which he would like to put in an 'End of Season Sale.' The sale is going to be held in a hotel.

NOTE:-All the data files required complete the below task are or stored in Computer folder

Questions on Excel

a The owner is planning an End of Season Sale, and needs some information.
He needs to know the Sale Stock Value for each product.
Sale Stock Value is **Number in Stock** multiplied by **Price**

b He also needs to know the total of the Sale Stock Value.

c He wants you to make the product with the highest Sale Stock Value stand out.
He needs you to create a chart that shows the Sale Stock Value for each product.

d The products must be shown in ascending order of stock value.
You have been given a file with the stock data.
You have been given a file with the stock data.
Make sure the data is formatted appropriately, clear and easy to read.

Questions on MS-Word

e The owner needs you to create an A4 size poster to advertise the product with the highest stock value from your spreadsheet.

f The poster must include details about the product, including Make, Product, Colour and Price.

g You need to select and use a suitable picture of a surf board from the ones you have been given.

h The words "Special Offer 50% off!" need to be included in an eye catching font that is clear and easy to read.

i He wants you to check the appearance of the poster to make sure it is clear and what is needed.

Make sure the files and folders you have used and those you have created are organised so they can be found easily.

3 **Scenario:** You are working with the owner of City Books. He has three shops and needs to know which books are in each store and the value of the stock. He is planning to have a book sale and needs to advertise this book sale event.

NOTE:-All the data files required complete the below task are or stored in Computer folder

Questions on Excel

a The owner needs to know the total stock value of the books that are in **each** of his **three** shops.

b He needs a chart that shows this in ascending order.

c You have been given a file with this information. Some of the data needs updating.

The publish date of the Motor sports book has been entered incorrectly. It should be 2009.

d The following details need to be added:

In the Jesmond shop, 9 copies of a hard back sports book called Surfing which was published in 2010 and priced at £9.50.

e The data needs to be displayed in the following order:

Publish date, Title, Genre, Hard/Paper back, Shop, Number in stock, Retail Price, Stock Value

Make sure your work is clear, easy to read and formatted appropriately.

Questions on MS-Word

f There is a book sale next month. Create a poster to advertise the event.

You have been given files with the poster information and the logo.

g The logo needs to be inserted at the top of the poster.

h Insert a table at the bottom of the poster.

i It needs to include details of the title, publish date and price of the two sports books published in 2004.

j Format the table to include borders and shading.

Make sure that the poster is accurate and is easy to read.

Make sure the files and folders you have used and those you have created are organized so they can be found easily.

4 **Scenario:** You are working with the Manager in a seaside café called Snack Shack. She has prepared some menus for the new season and wants you to create a new price list to put on the tables. She also needs to find out which products made the most money during the year.

NOTE:-All the data files required complete the below task are or stored in Computer folder

Questions on Excel

a The Manager needs to look at the sales figures for each of the last 12 months.
She needs you to create a chart that shows the total sales value for each product range.
You have been given a file with the sales data.

b She wants you to input a formula that will display the total sales value of each product range for the year.

c She also wants you to make the product with the lowest sales value stand out.
Make sure the data is formatted appropriately, clear and easy to read.

Questions on MS-Word

d The Manager needs you to create a one-page A4-sized menu.
Use the file 'price list'

e It must be in two columns. The item headings (eg breakfasts) need to stand out.

f The heading 'Snack Shack Menu' needs to be centered.

g The price list must also include opening times.
You have been given a file with this information.

h Include the picture you flipped and saved in Task 2.
She wants you to check the appearance of the price list to make sure it is clear and has no errors.
Make sure the files and folders you have used and those you have created are organized so they can be found easily.

5 **Scenario:** Your company, Seymour Solutions, is holding a recruitment day. You have been asked to help prepare information and develop a presentation for the manager.

NOTE:-All the data files required complete the below task are or stored in Computer folder

Questions on Excel

a Seymour Solutions recently asked 150 people to take part in a customer satisfaction survey.
The manager would like to use the results of the survey in his presentation.

b Create a chart showing details of the customer satisfaction survey.
You have been given the file containing the data.

c He needs you to use formula/s to show the percentage of 'yes' responses to 0 decimal places.
Percentage of 'yes' responses is number of **'yes'** responses divided by 1.5

d He wants the chart to show the percentage of 'yes' responses column in descending order.
Make sure all the data is clear, easy to read, and formatted appropriately.

Questions on Power Point

e The manager has a first draft of his presentation for the recruitment day.

You have been given the file, and he needs you to finish it.
It must include:

f
- Come and join us! in bold on the first slide and the Seymour Solutions logo in a suitable position (you have been given this)
- The chart that you created in Task 3 inserted into slide 3
- Your name as a footer on all slides
- A new background for all slides

g Make sure the presentation is clear, easy to read and has no errors. When you have done this, print out your presentation in handout layout (4 slides to the page).

h Organize the files you have used and those you have created into folders so they can be found easily.

6 **Scenario:**GreenMeadowSchool is having an open day. You have been asked to edit a presentation for the Head teacher to use.

Questions on Excel

a The Head teacher needs you to update a file that shows the results from this year's parent survey.
You have been given the file containing the data.
Use formulas to display the subtotals of each key stage.

b Calculate the total for both key stages.

c The parent feedback figures need to show as 'percentage.' Make sure all the data is clear and easy to read and fits on one page.

d Create a chart that shows the results of the parent feedback for the column 'strongly agree' only.

e Sort the percentages in descending order of percentages.

Questions on Power Point

f The Head teacher has started a presentation for the school's open day. You have been given the file, and you need to finish it.

g It must include:
- A new bullet point on slide 2:
- Enjoy the tea and cakes
- The sound file and the image you have been given
- The URL for Ofsted that you found in Part A on a new slide. Give this slide a suitable heading
- The chart that you produced in Task 3.

h Make sure the presentation is clear, easy to read and has no errors.

i Organise the files you have used and those you have created into folders so they can be found easily.

SECOND SEMESTER BCA

Syllabus

II Semester BCA							
Part	**Paper**	**Title**	**Hours**	**Marks**			**Credits**
				IA	**Exam**	**Total**	
Part-1	LK/S/H B2	Language(Kannada/Sanskrit/Hindi)	4	30	70	100	2
	LE B2	Language English-II	4	30	70	100	2
Part-2	2BC-1T	Numerical and Statistical Methods	4	30	70	100	4
	2BC-2T	Data Structures Using C	4	30	70	100	4
	2BC-3T	Object Oriented Programming Using C++	4	30	70	100	4
	2BC-4T	Operating System	4	30	70	100	4
	2BC-5P	Data Structure Lab Using C	3	15	35	50	1
	2BC-6P	C++ Lab	3	15	35	50	1
Part-3	MC1	Indian Constitution & Human Right	2	15	35	50	1
Total Marks & Credits				**240**	**560**	**800**	**25**

LS-B2 : Sanskrit Paper-2- POETRY-PROSE

Unit-I

Select portions from Ramayana and Panchatantra, (Kishkindha Kanda-18, Story of Cakradhara in Aparikshita karika)

Unit - II

History of Sanskrit Literature, Ramayana, Mahabharata, & Prose Literature

Unit - III

Translation of prose passage

Unit-IV

Grammar Exercise from unseen passage (Sandhi-Samasa)

Unit-V

Internal Assessment

Internal Assessment
(75%Attendance/ Min. 2-Assignments/ 2-Tests)

Total Marks	100 Marks
Teaching hours per week	04 hours

LH-B2 : Hindi : "काव्यांजलि' '

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

युनिट -१ : तुलसीकेदोहेऔरविजयरथ। **9 Hours**

कवितुलसीदासकेपरिचय।प्रस्तुतदोहावलीकीपरिचय।रामनामकामहत्ताऔरमनुष्योंकेगुणका विवरण।राम- रावणयुद्धप्रसंग।

युनिट - २: बिहारीकेदोहे। **9 Hours**

कविबिहारीकेपरिचयबिहारीनेछोटेछोटेदोहोमेंबडेबडेभावयानेसागरमेंगागरभरनेकाविवरण।

युनिट-३ : दानवीर। **9 Hours**

कविरामधारीसिंहदिनकरकापरिचय।कर्णकादानगुणपरिचय।

युनिट-४ : वाण्ि। **9 Hours**

कविसुमित्रानंदपंतकापरिचय।वाण्िकीमहत्वकापरिचय

युनिट-५: पक्षधर। **9 Hours**

कविआज्ञेयकापरिचय।मानवजीवनकेसंघर्षपरविवरण।

युनिट-६ : पेडगिराऔररचना। **9 Hours**

कविडॉ. टी.डीप्रभाकरशंकर

प्रेमी' कापरिचय।दैनिकघटनाकीमहानतथ्यकाप्रस्ताव।प्रशासनिकशब्दावलीऔरकहानीलेख न।

TEXT BOOKS

1. 'कांव्यांजली' संपादकबि. जयलक्ष्मी, एस.एम. मुमताजबेगम।प्रकाशकऔरमुद्रकःप्रसारंग, बेंगलूरुविश्वविद्यालय, बेंगलूरु।

REFERENCE BOOKS

1. हिन्दीव्याकरणप्रबोधएवंरचना।संपादक डॉ. विजयपालसिंह।प्रकाशकऔरमुद्रक : समग्रविकासप्रकाशन, इलाहबाद।

LK-B2 : KANNADA : ಪ್ರಾಚೀನ ಕಾವ್ಯ ಮಾರ್ಗ

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

ಪ್ರಾಚೀನ ಕಾವ್ಯ ಮಾರ್ಗ	**Hours**
ನಳಕೂಬರ ಪ್ರಸಂಗ–ನಾಗಚಂದ್ರ	6
ಇಳೆಯಾಂಡ ಗುಡಿಮಾರನರಗಳೆ–ಹರಿಹರ	6
ಗಾಣರಾಣಿಯರ ಪ್ರಸಂಗ–ರಾಘವಾಂಕ	6
ಕಿರುವೆರಳಸೆಟೆ–ರತ್ನಾಕರವರ್ಣಿ	6
ಸರ್ವಜ್ಞನ ತ್ರಿಪದಿಗಳು	6
ಪ್ರಬಂಧಗಳು	
ದೇವಕನ್ಯೆ	5
ಕಾಸಿನಸಂಘ	5
ಕೆಲವು ಮೇಷ್ಟ್ರುಗಳು	5
ಜೇಬಿನ ಸುತ್ತ ಮುತ್ತ	5
ಸ್ವಾಮಿಸಂಧಾನ	4

LE-B2 : Language English

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I: Poetry. **10 Hours**

1.Sonnet 94-William Shakespeare
2.Pulley- George Herbert
3.The Tiger- William Blake
4.Election-Sitakantha Mahapatra

Unit - II : Novella. **4 Hours**

A Study In Scarlett- Arthur Conan Doyle

Unit - III : Scenes From Selected Plays. **10 Hours**

1.The Merchant Of Venice-Shylock's Speech(Shakespeare)
2.Urubhanga- Bhaasa

Unit-IV : Language Skills: **24 Hours**

1.Comprehension
2.Summary Writing
3.Paraphrase the Poem
4.Vocabulary
5. Punctuation

2BC-1T NUMERICAL AND STATISTICAL METHODS

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

1. Unit-I: NUMERICAL METHODS. 8 Hours

Solution of equations (polynomial and transcendental equations). Interval halving methods, secant, RegulaFalsi, Newtons-Raphson methods, Fixed point iteration method.

Unit - II 8 Hours

Solution of system of linear equations, Gaussian elimination method, Gauss-Jordan, Gauss-Siedal iteration methods, LU Decomposition method, Eigen values and Eigen vectors of a square matrix.

Unit - III 5 Hours

Newton's forward and backward differences, Interpolation formula-Lagrange interpolation, Curve fitting by least squares method.

Unit-IV 5 Hours

Numerical differentiation, Integration, Trapezoidal and Simpson's formula, Romberg Integration.

STATISTICAL METHODS:

Unit-V 7 Hours

Basics concepts and definition of statistics. Mean, Standard deviation, coefficient of variation, skewness and kurtosis, Karl Pearson correlation, rank correlation and illustrated examples.

Unit-VI 6 Hours

Probability: Basic concepts and definition of probability, Probability axioms, Laws of probability(based on set theory concepts), Conditional probability Bayes theorem, problems and applications

Unit-VII 5 Hours

Random variable and Expectation: Discrete and continuous random variables, expectation of random variables, theorems on expectation, illustrative examples

Unit-VIII 5 Hours

Random variable and Expectation: Discrete and continuous random variables, expectation of random variables, theorems on expectation, illustrative examples

Unit-IX 8 Hours

Probability Distribution: Probability function, Probability mass/density function Discrete Distribution-Bernoulli binomial, Poisson geometric distributions continuous distribution-Exponential and Normal Distribution applications and problems.

TEXT BOOKS

1. J.Medhi: Statistical Methods, New Age Publications 1992
2. Ronald E Walpole and Raymond H Meyers: Probability and Statistics for Engineers and Scientists (Second Edition).

2BC-2T: Data Structures Using C

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I **9 Hours**

Introduction and Overview: Definition, Elementary data organization, Data Structures, data structures operations, Abstract data types, algorithms complexity, time-space tradeoff. Preliminaries: Mathematical notations and functions, Algorithmic notations, control structures, Complexity of algorithms, asymptotic notations for complexity of algorithms.

Unit - II **9 Hours**

Arrays: Definition, Linear arrays, arrays as ADT, Representation of Linear Arrays in Memory, Traversing Linear arrays, Inserting and deleting String Processing: Definition, Storing Stings, String as ADT, String operations, word/text processing, Pattern Matching algorithms.

Unit - III **9 Hours**

Linked list: Definition, Representation of Singly linked list in memory, Traversing a Singly linked list, Searching a Singly linked list, Memory allocation, Garbage collection, Insertion into a singly linked list, Deletion from a singly liked list; Doubly liked list, Header liked list, Circular linked list.

Unit-IV **9 Hours**

Stacks – Definition, Array representation of stacks, Linked representation of stacks, Stack as ADT, Arithmetic Expressions: Polish Notation, Application of Stacks, Recursion, Towers of Hanoi, Implementation of recursive procedures by stack. Queues – Definition, Array representation of queue, Linked list representation of queues Types of queue: Simple queue, Circular queue, Double ended queue, Priority queue, Operations on Queues, Applications of queues.

Unit-V **9 Hours**

Sorting: Bubble sort, Insertion sort, Selection sort, Searching: Linear Search, Binary search, Multidimensional arrays, Matrices and Sparse matrices.

Unit-VI **9 Hours**

Graphs: Graph theory terminology, Sequential representation of Graphs: Adjacency matrix, traversing a Graph. Tree – Definitions, Binary trees, Representing binary trees in memory, Traversing Binary Trees, Binary Search Trees, Searching, Inserting and Deleting in a Binary Search Tree.

TEXT BOOKS

1. Seymour Lipschutz, "Data Structures with C", Schaum'soutL*ines*, Tata McGraw-Hill, 2011.

REFERENCE BOOKS

1. Mark Allen Weiss, "Data Structures and Algorithm Analysis in C", Second Edition, Pearson Education, 2013.

2. Robert Kruse, C.L.Tondo, Bruce Leung, ShashiMogalla, "Data Structures and Program Design using C", Pearson Education, 2009.

3. Forouzan, "A Structured Programming Approach using C", 2nd Edition, Cengage Learning India, 2008.

2BCA-3T :Object Oriented Programming using C++

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I **9 Hours**

Evolution of programming methodologies-Procedure oriented versus Object Oriented Programming-characteristics of OOPS, Basics of OOP, Merits and Demerits of OOP. Data types, Input and Output, reference variables, Decision and loop, Arrays, String, structures and unions

Unit - II **9 Hours**

Built-in functions, user defined functions, different kinds of user defined function, calling the function, function definition, function declaration, parameter-actual and formal, different methods of calling the function-call by value, call by reference, overload function-different types of arguments, different number of arguments, default argument, inline function.

Unit - III **9 Hours**

Simple class-defining the class, defining data members and member functions, Access specifier-private, public, protected, Static data members and functions, Array of objects, Objects as function arguments. Difference between class and structure, Friend functions and friend classes.Constructors-constructor with argument, constructor without arguments, constructor overloading, copy constructor, destructor.

Unit-IV **9 Hours**

Defining operator overloading, overloading unary operators, overloading binary operators, manipulation of string using overloaded operator, rules for overloading and type conversions. PBase Class-derived class, defining derived classes, protected access specifier, public inheritance and private inheritance-member accessibility, single inheritance, multi- level inheritance, multiple inheritances, hierarchical and hybrid inheritances, virtual base class.

Unit-V **9 Hours**

Pointer declaration and Access, Pointer to void, pointer and arrays, pointer Constant and pointer variable, pointer and functions , call by pointer , array of pointers, pointers to string, pointer sort, memory management-new and delete, pointer to object- referencing members using pointers, this pointer, returning values using this pointer.

Unit-VI **9 Hours**

Compile time versus runtime polymorphism, virtual functions, pure virtual function and abstract class. C++ stream and C++ stream classes, unformatted I/O operators, formatted I/O operators, manipulators-user defined manipulators. File stream classes, file input and output, string I/O, character I/O, writing an object to disk, reading an object from disk, file opening using open function, opening modes, mode parameters, file pointer, functions for manipulating file pointer, Command line arguments.

TEXT BOOKS

1. OOP with C++ by Balaguruswamy

REFERENCE BOOKS

1. C++ Primer by Stephen Prata
2. Teach yourself C++ by Action line Stevens

2BC-4T: Operating Systems

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I **9 Hours**

Introduction. Definition, Types Of Operating Systems, Functions of Operating System, services ,system components, system calls, process concepts, process state, PCB .

Unit - II **9 Hours**

Process Management. Schedulers, preemptive and non-preemptive scheduling, scheduling criteria, CPU scheduling algorithms , process synchronization, semaphores, deadlocks, detection and recovery.

Unit - III **9 Hours**

Memory Management. Functions, single contiguous, partitioned memory management, multiple relocatable partitioned memory management, paging, segmentation.

Unit-IV **9 Hours**

MM and File Management. Demand paging and virtual memory management. File Concept, fileaccess methods, directory structures, allocation methods, free space management.

Unit-V **9 Hours**

Disk Management (Structure, Disk scheduling methods). Secondary storage structure, Disk structure, disk Scheduling methods, disk scheduling algorithms, Disk management, swap-space management.

Unit-VI **9 Hours**

Protection and security. Goals of protection, Domain protection, Access matrix, security problem, authentication, one time password, Program threats and system threats.

TEXT BOOKS

1. Operating System Concepts by Galvin and Silbertehatz, publisher John wiley& sons 2011.

2. Operating System by William stallings, publisher Addison Wesley pub co inc,2009.

REFERENCE BOOKS

1.Operating Systems by H. M. Dietel,Prentice Hall,3rd Edition 2003.

2.Operating System by Gray Nutt ,3rd Edition, july 13,2003.

2BC-5P: Data Structures using Lab Using C

SECTION-A

1. Use a recursive function to find the Fibonacci series.
2. Use pointers to find the length of a string and to concatenate two strings.
3. Use pointers to copy a string and to extract a substring from a given a string.
4. Use a recursive function for the towers of Hanoi with three discs.
5. Insert an integer into a given position in an array.
6. Deleting an integer from an array.
7. Write a program to create a linked list and to display it.
8. Write a program to sort N numbers using insertion sort.
9. Write a program to sort N numbers using selection sort.
10. Use a recursive function to find the Fibonacci series.
11. Use pointers to find the length of a string and to concatenate two strings.

SECTION-B

12. Inserting a node into a singly linked list.
13. Deleting a node from a singly linked list.
14. Inserting a node into a doubly linked list.
15. Deleting a node into a doubly linked list.
16. Pointer implementation of stacks.
17. Pointer implementation of queues.
18. Creating a binary search tree and traversing it using in order, preorder and post order.
19. Sort N numbers using merge sort.
20. Inserting a node into a singly linked list.
21. Deleting a node from a singly linked list.

2BC- 6P: C++ Lab

SECTION-A

1 Write a program to swap two values using pointers and reference variables.
2 Write a program to calculate area and circumference of circle using inline functions.
3 Using different methods to check whether a given number is prime or not using function overloading and also use default arguments.
4 Write a program to find a factorial of a number using function overloading (use both direct and recursive methods).
5 Write a program to accept cricket players name, total runs, and total matches and print these details with batting average (Use arrays of objects).
6 Create a class to hold information of a husband and another for the wife. Using friend functions give the total salary of the family.
7 Write a program to demonstrate static members.
8 Program to overload == operators to compare two strings.
9 Write a program to create a database for a bank account contains Name, Account no, Account type, Balance, Including the following a) Constructors b) destructors call) default constructors d) input and output function ; input and output for 10 people using different methods.
10 Write a program to create a student report using Inheritance technique.

SECTION-B

11 Date incrementing using ++ operator (unary operator).
12 Program to overload Binary operator '+' to concatenate 2 strings.
13 Write a program to perform Addition of two matrices using operator overloading.
14 Create a base class for a stack and implement push and pop operation. Include a derived class to check for stack criteria such as a) stack empty b) stack full c) stack overflow d) stack underflow.
15 Write a program to illustrate hybrid inheritance.
16 Program to sort n names using pointer sort.
17 Demonstration of Virtual function.
18 Write a program to show returning current object, accessing member data of current object and returning values of objects using this pointer.
19 Create a database using concepts of files for a student including the following fields: student- name, Student's Register No, Student's Attendance (overall % of Attendance); and enter Data for 10 students and output the same in proper Format.
20 Accessing a particular record in a Employee file.

THIRD SEMESTER BCA

Syllabus

III Semester BCA							
Part	**Paper**	**Title**	**Hours**	**Marks**			**Credits**
				IA	**Exam**	**Total**	
Part-1	LK/S/H B3	Language(Kannada/Sanskrit/Hindi)	4	30	70	100	2
	LE B3	Language English-III	4	30	70	100	2
Part-2	3BC-1T	Computer Graphics	4	30	70	100	4
	3BC-2T	Unix Operating System	4	30	70	100	4
	3BC-3T	Database Management Systems	4	30	70	100	4
	3BC-4T	VB.Net Programming	4	30	70	100	4
	3BC-5P	Unix Lab	3	15	35	50	1
	3BC-6P	VB.Net and SQL Lab	3	15	35	50	1
	3BC-7P	Computer Graphics Lab	3	15	35	50	1
Part-3	MC2	Human Resource Management	2	15	35	50	2
	OE	Open to the students of Other Disciplines	2	15	35	50	1
Total Marks & Credits				**270**	**630**	**900**	**28**

LS-B3 : Sanskrit Paper-3- Champu

Unit-I

Select portions from Champu Ramayana (Ayodhyakanda)

Unit - II

History of Sanskrit Literature, Champu Literature.

Unit - III

Translation of Unseen passage from English/Kannada to Sanskrit

Internal Assessment

Internal Assessment
(75%Attendance/ Min. 2-Assignments/ 2-Tests)

Total Marks	100 Marks
Teaching hours per week	04 hours

LH-B3 : Hindi : "काव्यांजलि' '

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

युनिट -१ : "दौड' ' । **45 Hours**

उपन्यासदौडकाउपन्यासकममताकालियाकापरिचय।आजकेनवयुवकोंकाजीवनचित्रण।

युनिट - २ : रचना। **9 Hours**

पत्रलेखनकापरिचय।सारलेखनकापरिचय।

TEXT BOOKS

''दौड' ' संपादक : ममताकालिया।संपादकऔरमुद्रक : वानिप्रकाशननईदिल्ली।

REFERENCE BOOKS

1. सुबोधव्यवहारिकहिन्दी।संपादक :डॉ. कुलदीपगुप्त।

   संपादकऔरमुद्रकःअनिलपुसककेन्द्र, बेंगलूरु।

LK-B3 : KANNADA : ಇಂದಿನ ಕವಿತೆ

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

1. ಸೂಜಿಯೇ ನೀನು ಸೂಜಿಯೇ	2
2. ಕಾರ್ಗಾಲದ ವೈಭವ	2
3. ರಂಗವಲ್ಲಿ	2
4. ನಾಮ ಮಹಿಮೆ	2
5. ಕಲ್ಕಿ	2
6. ಚಿಗರಿಗಂಗಳ ಚೆಲುವೆ	2
7. ತೆರೆದಬಾಗಿಲು	2
8. ಸಂಜೆದಾರಿ	2
9. ಏನಾದರೂ ಮಾಡುತಿರು ತಮ್ಮ	2
10. ಅವ್ವ	2
11. ಗಂಗಾಮಾಯಿ	2
12. ಕಟ್ಟಡದ ಕೆಲಸಗಾರರು	2
13. ಮುಖಾಮುಖಿ	2
14. ಅ. ಆ ಮತ್ತು ನಾನು	2
15. ಓಡುವ ರೈಲಿನಲ್ಲಿ	2
16. ಜೀವವಾಗೊ ಬಯಕೆಯಲ್ಲಿ	2
17. ನಾ ಬರೀ ಭೂಣವಲ್ಲ	2
18. ಅಕ್ಕ ಸೀತಾ ನಿನ್ನಂತೆ ನಾನೂ ಶಂಕಿತ	2
19. ಎತ್ತು ಮತ್ತು ಯೇಸು ಕ್ರಿಸ್ತ	2
20. ಹಡದಿ ಹಾಸುವ ಅಗಸರ ಹಾಡು	2
ಪ್ರಬಂಧ : ವಿಚಾರ ಸಾಹಿತ್ಯ – 2	
1. ಅನಿಷ್ಟ ಪದ್ಧತಿಯ ವಿರುದ್ಧ	4
2. ಯಂತ್ರಗಳ ಕಳಚೋಣ	4
3. ಇಂಗ್ಲಿಷ್ ಬ್ರಾಹ್ಮಣ ಕನ್ನಡ ಶೂದ್ರ	3
4. ಸಮಾನತೆಯ ಕನಸನ್ನ ಮತ್ತೆ ಕಾಣುತ್ತಾ	3

LE-B3 : Language English

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I: Poetry. **4 Hours**

1.Sonnet 94-William Shakespeare
2.Pulley- George Herbert
3.The Tiger- William Blake
4.Election-Sitakantha Mahapatra

Unit - II : Theme Based-Cultural Conflicts **10 Hours**

1.Diary of a Young Girl-Anne Frank
2.Wings of Fire-A.P.J.Abdul Kalam
3.Hatred- Wislawa Szymbroska
4.All the Generations Before Me-Yehudi Amichai

Unit-IV : Language Skills: **24 Hours**

1.Reading Skills
2.Precis Writing
3.Journal Writing

3BC-1T :Computer Graphics

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I **9 Hours**

Overview of computer graphics. Practical applications of computer graphics, Display devices (CRTs, DVST, and Plasma panel display) hard copy devices (printers and plotters), Display processors, and Graphics software and graphics standards.

Unit - II **9 Hours**

Output Primitives. Line drawing and circle generating algorithms, color and intensity, Area filling, scan-line area fill algorithm.

Unit - III **9 Hours**

Two-dimensional Transformations. Scaling, translation and rotation, Matrix representations and homogeneous coordinates, composite transformations, reflection and shear, raster methods for transformations.

Unit-IV **9 Hours**

Concept of Window and clipping. Concept of a window, window to viewport transformation. Clipping algorithms (Cohen-Sutherland line clipping algorithm and Sutherland –Hodgeman polygon clipping algorithms), text clipping and interior clipping.

Unit-V **9 Hours**

Three-Dimensional Graphics. Three-dimensional co-ordinate systems, Three--dimensional display techniques, Three--dimensional graphics packages, polygon surfaces, Fractals, objects, Representation of solid objects, constructive solid geometry, Octrees, Introduction to fractals.Hidden surface elimination-characteristics of algorithms, back face detection method, Depth buffer algorithm and Introduction to animation.

Unit-VI **9 Hours**

Input Devices and Input Techniques. Physical input devices (Key board, mouse, lighten, and tablet devices) logical classification of input devices, Input modes and functions, event handling. Interactive input techniques.

TEXT BOOKS

1. Computer Graphics by Hearn D & M.P. Baker, Second Edition (Pearson Education)

REFERENCE BOOKS

1. Principals of Interactive Computer Graphics by Newman W.M. & R.F. Sproul 2nd Ed, (McGraw- Hill Book Command. 1979).
2. Computer Graphics and applications by Dennis Harris(*Cengage Learning EMEA*)
3. Computer Graphics by S. Harrington(McGraw- Hill International Edition)

3BC-2T : Unix Operating System

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I **9 Hours**

Introduction: History, features of Unix System architecture, Unix File System, Boot Block, super block, I-node table, data block, storing and accessing files, directory and file related commands.

Unit - II **9 Hours**

Process management: Process creation, process examining and process killing, background process, piped process, process control, FOR, EXIT, WAIT and EXEC commands, demon process, delaying of processing and processing at specified time.

Unit - III **9 Hours**

Special tools and utilities: Filters, Stream editor SED and AWK, Unix System calls and library functions, processes, signals and interrupts, writing simple system calls, storage and compression facilities.

Unit-IV **9 Hours**

System administration: User and supervisor privileges and facilities, controlling processes, accessing the file system, security issues, secondary storage management, Unix System Communication: Introduction, write, read, wall commands, sending and handling mails.

Unit-V **9 Hours**

Shell Programming 1:Vi Editor,shelltypes,shell command line processing,shell script features,executing a shell script,system and user defined variables,exprcommand,shell screen interface,read and echo statement,commandsubstitution,escape sequence characters,shell script arguments,test command, simple programs.

Unit-VI **9 Hours**

Shell Programming 2: Conditional Control Structures-If statement , case statement,Loopingcontrol structure-While, Until, For, Break, and continue statements, Shell programs.

TEXT BOOKS

1. "Unix Shell programming" by YeshwantKanetkar,BPB Publications,4th Edition.
2. "Unix concepts and Applications" by Sumitabha Das, Tata McGraw-Hill Education 4th Edition,2006.

REFERENCE BOOKS

1. M.G.Venkateshmurthy,"Introduction to UNIX & SHELL Programming",FirstEdition,Pearson Education,2004.
2. Forouzan,"Unix and Shell Programming",1st Edition,2008 Cengage Learning India.
3. The Complete Reference,UNIX,Second Edition by Kenneth Rosen,DouglasHost,Mc-Graw-Hill Publications.

3BC-3T : Database Management Systems

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I **9 Hours**

Introduction, Database Systems, Characteristics of DB Approach, Advantages of DBMS, Database Users, DB Languages, Applications of Database.

Unit - II **9 Hours**

Data Model Concepts, Database System Architecture-Centralized, Client/Server: Two-tier, Three-tier, Three-Schema Architecture-Physical Data Independence and Logical Data Independence, Different types of data models, Database Interfaces.

Unit - III **9 Hours**

E-R Model concepts- Entities, Attributes, Relationship, E-R model constraints, E-R diagrams, Relational model concepts, Characteristics of relations, constraints on relations, Relational Algebra-Unary and Binary operations.

Unit-IV **9 Hours**

SQL:DDL - Create table/views, Drop, Alter commands, DML - Insert, Delete, Update, Select, queries ,sub-queries, nested queries, Joins – equijoin, non-equijoin, Built-in functions of SQL & grouping.Concept of Functional dependency, Normalization – 1NF,2NF,3NF.

Unit-V **9 Hours**

Secondary Storage devices, Buffering of Blocks, Files on disk, Operations on files, File organization: Ordered files, Hashed files, Indexed files, Heap files, RAID organization.

Unit-VI **9 Hours**

Concurrency Control Techniques, Recovery Techniques on databases, Transaction processing concepts, Database security and authorization. Introduction to Distributed databases, Data fragmentation, Replication and Allocation in distributed database, Query Processing in Databases.

TEXT BOOKS

1. RemezElmasri and Shamkant B. Navathe, “Fundamentals of Database Systems”, 5 th Edition, Pearson Education, 2007.

REFERENCE BOOKS

1. Abrahamsi. Silberschatz, Henry. F. Korth, S. Sudarshan, “Database System Concepts” 6th Edition, McGraw Hill, 2012.
2. C.J.Date, “Introduction to database systems”, Eight Edition, Addison Wesley

3BC-4T : VB.NET Programming

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I **9 Hours**

Overview of Microsoft .NET Framework

The .NET Framework, Managed Code MSIL, Metadata and JIT Compilation - Automatic Memory Management, The Common Language Runtime (CLR), The .NET Framework class Library.

Unit - II **9 Hours**

Programming in Visual basic .net

IDE,Variables and Data Types,operators,Data Type Conversion Functions, String & Date Functions and Methods'Procedures and Functions,Arrays,Dynamic Arrays,Arrayclass,Arraylist,Control Flow Statements, Conditional Statements, Loop Statements. MsgBox and InputBox.

Unit - III **9 Hours**

Introduction to Windows controls

Working with Tool Box Controls, Common controls - Label, Text Box, Button, Check Box,Radio Button, Date Time Picker, List Box, Combo box,Picture Box, Rich Text Box, Tree View, Tool Tip,Progress bar, Masked Textbox, Checked List box,Data Grid, error provider, Help provider,Timer

Unit-IV **9 Hours**

Object Oriented Programming

Creating Classes, Object Construction & Destruction, Properties, Methods, Events, Access Specifiers: Public, Private, Protected, Protected, Friend,Me, MyBase and MyClass keywords, Abstraction, Encapsulation & Polymorphism Interfaces & Inheritance.

Unit-V **9 Hours**

Creating Applications, Building Projects, Using simple components, Running VB.NET applications, Console Programs.

Unit-VI **9 Hours**

Database access using ADO.NET

Visual Database Tools, ADO .NET Object Model, ADO .NET Programming

TEXT BOOKS

1. VB.NET By Rajendra Salokhe.
2. VB.NET By Chirag Patel

REFERENCE BOOKS

1.Visual Basic .NET Programming (Black Book) - By Steven Son Holzner , DreamTech Publication
2. Mastering Visual Basic.NET by Evangelos Petroutsos BPBPublication
3. Moving to VB.NET : Stategies, Concepts, and Code - by Dan Appleman – Apress Publication
4. Microsoft Visual Basic .NET Step by Step - by Michael Halvorson, PHI Publication

3BC-5P: Unix Lab

Section: A

1. To print all prime numbers between m and n(m<n).
2. To check whether a given number is Armstrong or not.
3. To find GCD and LCM of two numbers.
4. To count the number of vowels.
5. Checking whether the given string is a palindrome or not.
6. To find the occurrence of a character in given string.
7. Write a shell script, which displays all the files in the current directory, which has read or write permission.
8. Write a shell script to find a given pattern in a list of files of current directory using grep command.
9. To print a string in the reverse order.
10. Create a file containing the following fields candidate no name, Age, Sex, Height and Weights. Print all the details in a neat format.

Section: B

11. Write a menu driven shell program for payroll System.
12. Write a menu driven shell program to generate a Electricity Bill.
13. Write a menu driven shell program to generate a shopping Bill.
14. Write a shell script to print the student details and generate the marks card.
15. Write a menu driven shell script to implement the following unixcommands.
    a.rm b. uniq c. tail d. cmp
16. Write a shell program for Inventory control of Super market.

3BC-6P: VB.NET and SQL Lab

Part-A (VB.NET)

1. Accept a character from console and check the case of the character.
2. Write a program to accept any character from keyboard and display whether it isvowel or not.
3. Write a VB.Net program to accept a string and convert the case of the characters.
4. Develop a menu based VB.Net application to implement a text editor with cut, copy,paste, save and close operations.
5. Develop a form in VB.NET to pick a date from Calendar control and display the day,month, and year details in separate text boxes.
6. Develop a database application using ADO.NET to insert, modify, update and deleteoperations.
7. Develop a VB.Net application using Datagrid to display records.
8. Write a Program to demonstrate Crystal Report for Sales Order.

Part-B (SQL)

A. To write simple queries and practice them.

1. Get the description of EMP table.
2. Get the description DEPT table.
3. List all employee details.
4. List all employee names and their salaries, whose salary lies between 1500/- and 3500/- both inclusive.
5. List all employees which starts with either J or T.
6.. List all employee names and jobs, whose job title includes M or P.
7.. List all jobs available in employee table.
8. List all employees who belongs to the department 10 or 20.
9. List all employee names , salary and 15% rise in salary.
10. List minimum , maximum , average salaries of employee.
11. Find how many job titles are available in employee table.
12. What is the difference between maximum and minimum salaries of employees in the organization?
13. Display all employee names and salary whose salary is greater than minimum salary of the company and job title starts with 'M'.
14. Find how much amount the company is spending towards salaries.

B. Writing Queries using GROUP BY and other clauses.

To write queries using clauses such as GROUP BY, ORDER BY, etc. and retrieving information by joining tables.

Source tables: emp, dept, programmer, software, study.

Order by : The order by clause is used to display the results in sorted order.

Group by : The attribute or attributes given in the clauses are used to form groups. Tuples with the same value on all attributes in the group by clause are placed in one group.

Having: SQL applies predicates (conditions) in the having clause after groups have been formed, so aggregate function be used.

1. Display total salary spent for each job category.
2. Display lowest paid employee details under each manager.
3. Display number of employees working in each department and their department name.
4. Display the sales cost of package developed by each programmer.
6. Display each institute name with number of students.
7. Display the details of software developed by the male programmers earning more than 3000/-.

C.Writing Nested Queries.

To write queries using Set operations and to write nested queries.

1. Find the name of the institute in which the person studied and developed the costliest package.
2. Find the salary and institute of a person who developed the highest selling package.
3. Display the details of those who draw the same salary.

D. Create Two tables.

gid	first_name	last_name	birthday	favorite_tool
1	Albert	Einstein	1879-03-14	mind
2	Albert	Slater	1973-10-10	singlet
3	Christian	Slater	1969-08-18	spade
4	Christian	Bale	1974-01-30	videotapes
5	Bruce	Wayne	1939-02-19	shovel
6	Wayne	Knight	1955-08-07	spade

Gardeners table

pid	gardener_id	plant_name	fertilizer	planting_date
1	3	rose	yes	2001-01-15
2	5	daisy	yes	2020-05-16
3	8	rose	no	2005-08-10
4	9	violet	yes	2010-01-18
5	12	rose	no	1991-01-05
6	1	sunflower	yes	2015-08-20
7	6	violet	yes	1997-01-17
8	15	rose	no	2007-07-22

Plantings table

a) Perform Inner Join for the above tables.
b) Perform Full Join for the above tables.
c) Perform Left Join.
d) Perform Right Join.

3BC-7P: COMPUTER GRAPHICS LAB

Section A

1. Program to draw a straight line using DDA technique.
2. Program to draw a straight line using Bresenham's technique.
3. Program to draw a circle using DDA technique.
4. Program to draw a circle using Bresenham's Technique
5. Pie chart Depiction of the results of an election between four parties.
6. Develop a Histogram for ABC Car Company produced 24, 16, 12 & 08 thousand cars in 1990, 1991, 1992, & 1993.
7. Animation like fish movement.
8. Animation like flag movement.
9. Animation like a man walking with an umbrella.

Section B

10. Program to fill any given polygon using scan fill algorithm.
11. Program to illustrate Translation and Scaling for a Triangle.
12. Program to illustrate Rotation and Reflection for a Triangle.
13. Program to implement Cohen – Sutherland line clipping algorithm.
14. Program to implement Sutherland-Hodgeman polygon clipping algorithm
15. Clipping the triangle against a given window

FOURTH SEMESTER BCA

Syllabus

IV Semester BCA							
Part	**Paper**	**Title**	**Hours**	**Marks**			**Credits**
				IA	**Exam**	**Total**	
Part-1	**LK/S/H B4**	Language(Kannada/Sanskrit/Hindi)	**4**	**30**	**70**	**100**	**2**
	LE B4	Language English-IV	**4**	**30**	**70**	**100**	**2**
Part-2	4BC-1T	Design and Analysis of Algorithms	**4**	**30**	**70**	**100**	**4**
	4BC-2T	Python	**4**	**30**	**70**	**100**	**4**
	4BC-3T	Software Engineering	**4**	**30**	**70**	**100**	**4**
	4BC-4T	Core Java	**4**	**30**	**70**	**100**	**4**
	4BC-5P	Python Lab	**3**	**15**	**35**	**50**	**1**
	4BC-6P	Core Java Lab	**3**	**15**	**35**	**50**	**1**
	4BC-7P	Mini Project	**3**	**15**	**35**	**50**	**1**
Part-3	MC3	Value Education	**2**	**15**	**35**	**50**	**2**
	SD	Skill Development	**2**	**15**	**35**	**50**	**1**
		Total Marks & Credits		**270**	**630**	**900**	**28**

LS-B4 : Sanskrit Paper -4 – Drama

Unit-I **Credits 2**

1. Select portions from a ful length drama or any One act play by Bhasa, Kalidasa, Bhavabhuti, Vishakhadatta
2. History of classical Sanskrit Literature, Drama
3. Comprehension
4. Internal Assessment

Unit - II **40Marks**

1. Select portions from a ful length drama, one act play (I Act of Abhijnana Shakuntalam)

Unit - III **20 Marks**

History of Sanskrit Literature, Sanskrit Dramatists

Comprehension **10 Marks**

Internal Assessment

Internal Assessment
(75%Attendance/ Min. 2-Assignments/ 2-Tests)

Total Marks 100 Marks

Teaching hours per week 04 hours

LH-B4 : Hindi : "नरसिंहकथा' '

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

युनिट - १ : नरसिंहकथा। **45 Hours**

नाटककारकापरिचय।पाँचअंकोंकोनाटकनरसिंहकथाकाविवरण।

युनिट - २ : रचना। **9 Hours**

निबंधलेखनकापरिचय।कल्पकापसंद : चलनचित्रऔरनाटककेतुलना।

TEXT BOOKS

'नरसिंहकथा' संपादकलक्ष्मीनारायणलाल।

प्रकाशकऔरमुद्रक : लोकभारतीप्रकाशन , इलाहाबाद।

REFERENCE BOOKS

1. सुबोधव्यवहारिकहिन्दी, संपादक : डॉ. कुलदीपगुप्त।प्रकाशकओरमुद्रक : अनिल पुस्तककेंद्र, बेंगलूरु

LK-B4 : KANNADA

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

	Hours
ನಾಟಕ	
ಸಂಕ್ರಾತಿ–ಪಿ. ಲಂಕೇಶ್	19
ಕಾದಂಬರಿ	
ಅಕಾಲದಲ್ಲಿ ಮಳೆ ಸುರಿದಾಗಿನ ಕತೆ : ಕನ್ನಡಕ್ಕೆ ಚಂದ್ರಕಾಂತ ಪೋಕಳೆ	19
ಗದ್ಯ ವೈವಿಧ್ಯ	
೧. ವಿಲಿಂಪ ರಾಮಾಯಮಣ	04
೨. ಶ್ರಾದ್ಧ	04
೩. ಕಾಜಾಣದ ಕೂಜನಕೆ ಮನಸೋತ ಹಂತಕ	04
೪. ಹುಲಿಯ ಬಾಯಲ್ಲಿ ಹರೆಯದ ತಾಯಿ	04

LE-B4 : Language English

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I: Poetry. **12Hours**

Novel: Animal Farm

Unit - II : Theme Based-Cultural Conflicts **12 Hours**

1.Goa(essay)
2.Climatic Change and Human Strategy-E.K.Federov(essay)
3.On Killing A Tree-Gieve Patel
4.The Diameter Of a Bomb-Yehuda Amichai

Unit-III : Language Skills: **24 Hours**

1.Critical Reasoning(reading skills)
2.Argumentative Essay
3.Abstract Writing
4.Statement Of Purpose

4BC-1T :Design and Analysis of Algorithms

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I:Introduction to Analysis and Design of Algorithms. 9 Hours

A simple example of Design, Insertion sort, pseudo code for insertion sort, analysis of time complexity, Asymptotic notations and time complexity and writing efficient programs (by considering some small programs). Harner's method of evaluating a polynomial at a given point, finding maximum and minimum for a given set of numbers, straight max, straight min, combinations for max and min. Analysis of linear and binary search algorithms.

Unit – II:Divide and Conquer Algorithms. 9 Hours

Divide and conquer algorithms, Sorting, multiplication of two long integers, Stassen's matrix multiplication.

Unit – III:The Greedy Method. 9 Hours

Greedy approach, optimum scheduling, fractional Knapsack problem, minimum spanning trees, single source shortest path problem.

Unit-IV : Dynamic Programming. 9 Hours

Dynamic programming, Design and analysis, Travelling salesman problem, optimal parameterization for product of a sequence of matrices.

Unit-V: Back Tracking and Branch and Bound. 9 Hours

Back tracking and Branch and bound methods, least cost method, 4-queens problem using back tracking, travelling salesman problem using branch and bound method.

Unit-VI: Lower Bound Theory 9 Hours

A brief introduction to NP complete and NP hard problems.

TEXT BOOKS

1. Fundamentals of computer algorithms by E. Horowitz and Sahani.

REFERENCE BOOKS

1. The Design and Analysis of Computer Algorithms by Aho, Hopcroft and Ullman.
2. Fundamental Algorithms : The art of Computer programming (Vol I) by D. E. Knuth.

4BC-2T: Python Programming

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I **10hrs**

Module -1 Teaching Hours RBT Levels Introduction to Computers, Programs, and Python Elementary Programming, History of Python, Basic Features of Python ,Mathematical Functions, Strings, and Objects

Unit - II **10hrs**

Creating Python Programs, Selections, Loops, Functions. Programming examples

Unit - III **12hrs**

Functional programming, Objects and Classes, More on Strings and Special Methods, GUI Programming Using Tkinter, Programming examples

Unit-IV **8hrs**

Lists, Multidimensional Lists, Object Oriented Programming, Inheritance and Polymorphism, Programming examples

Unit-V **14hrs**

Files and Exception Handling, Tuples, Sets, and Dictionaries, Recursion, programming examples

TEXT BOOKS

1. Y. Daniel Liang, “Introduction to Programming Using Python”, Pearson, ISBN:978-0-13-274718-9, 2013 2.Exploring Python, Timothy A. Budd, Indian edition, McGraw Hill education, ISBN-13: 978-0-07- 132122-8

REFERENCE BOOKS

1. Kenneth A. Lambert , B.L Juneja , “Fundamentals of Python Programming”, Cengage Learning,ISBN:978- 81-315-2903-4, 2015
2. Charles Dierbach. ”Introduction to Computer Science Using Python: Computational Problem-Solving Focus”, Wiley,ISBN:978-81-265-5601-4,2015
3. Allen B.Downey,”Think Python”,O’Reilly,First Edition,2012,ISBN:978-93-5023-863-9

4BC-3T: Software Engineering

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I **9 Hours**

Introduction: Evolution, S/W characteristics, Challenges, Applications, Software engineering process, S/W engineering models ,Waterfall Model,Prototyping,Iterative Development,Rational Unified Process,Extreme Programming and Agile Process.

Unit - II **9 Hours**

Software Requirements Analysis and Specification:Role of SRS, Requirement Process,Requirements specification, Desirable Characteristics of an SRS,Component of an SRS,Structure of a Requirement Document,Functional Specification with Use cases,Other Approaches for Analysis,Validation.

Unit - III **9 Hours**

Software Architecture:Role of Software Architecture,Architecture Views,Component and Connector View,Architecture Styles for C&C view,Documenting Architecture Design,Evaluating Architectures.

Unit-IV **9 Hours**

Design:Design concepts, Design Principles, Function-Oriented Design: Module-Level Concepts, Design Notation and Specification, Structured Design Methodology, Detail Design: PDL, Logic/Algorithm Design, Verification.

Unit-V **9 Hours**

Coding:Programming Principles and Guidelines,Unit Testing,Coding Standards and Verification,Code Inspection and Static Analysis.

Unit-VI **9 Hours**

Testing:Testing Concepts,Testing Process, Test Planning and Strategies, Black-Box Testing, White-Box Testing.

TEXT BOOKS

3. An Integrated approach to Software Engineering by Pankaj Jalote,3rdEdition,Narosa Publishing House,2013.
4. Software Engineering by Roger S.Pressman,A Practitioner's approach,7thEdition,McGraw-HILL Publication,2010.

REFERENCE BOOKS

1. Software Engineering by Ian Sommerville,9thEdition,Pearson Education Ltd,2010 .

4BC-4T :Core Java

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I **9 Hours**

Fundamentals of OOP: Introduction, Object-Oriented paradigm, Basic concepts of OOP, Benefits of OOP, Application of OOP. An Overview of Java: Java History, Java Features, Simple Java Programs, More of Java, An application with two classes, Java Program Structure, Java Tokens, Java Statements, Implementing a Java Program, Java Virtual Machine, Command line arguments, Programming Style.

Unit - II **9 Hours**

Constants, Variables & Data Types: Introduction, Constants, variables, Data types, Declaration of variables, Scope of variables, Arrays, 1-D Arrays, 2-D Arrays.

Classes, Objects and Methods: Introduction, Defining a class, Adding variables, Adding Methods, Creating Objects, Accessing class Members, Constructors, Method Overloading, Static Members, Nesting of Methods, Inheritance, Overriding Methods, Final Variables & Methods, Final Classes, Finalizer methods, Abstract Methods & Classes, Visibility Control, Dynamic Binding.

Unit - III **9 Hours**

Interfaces, Multiple Inheritance, And Packages:Defining Interfaces, Extending Interfaces, Implementing Interfaces, Accessing Interface variables, Java API Packages, Using System Packages, Creating Packages, Accessing a Package, Using a Package, Adding a Class to a Package, String Handling.

Unit-IV **9 Hours**

Exceptionhandling: Types of errors, Exceptions, syntax of Exception Handling Code, Multiple Catch Statements, Using finally Statement, Throwing our own Exception. Multi-threading programming: Creating Threads, Extending the Thread Class, Stopping & Blocking a Thread, Life Cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization , Implementing the 'Runnable' Interface.

Unit-V **9 Hours**

Applets, Event handling: Introduction, Difference b/w Applets & Application, Preparing & building Applet Code, Applet Life Cycle, Creating an Executable Applet, Applet Tag, Adding Applet to HTML Tag, running the Applet, Attributes of Applet Tag, Passing Parameters to Applet, Applet Capability & Security.

Unit-VI **9 Hours**

AWT: Abstract Window Toolkit, working with windows, Graphic and text, AWT Controls, Layout Managers & Menus. Introduction to Event Handling, Event Handling Mechanism, Listener Implementation, AWT Events.

TEXT BOOKS

1 JAVA The complete reference ,Ninth Edition,byPatrikNaughton and Herbert Sehildt,Oracle Press .

2 Programming With JAVA – By E Balaguruswamy,Mc-Grawhill publishers.

REFERENCE BOOKS

3 Java 7 Programming Black book,Dreamtech publication.

4 Introduction to Java Programming,10th Edition by Y.DanielLiang,Pearson

4BC-6P: Core Java Lab

Section: A

1 Write a program to find whether the character 'a' is in your name or not. If yes find the number of times of character 'a' appears in your name. Print locations of occurrences of 'a'.

2 To find sum of a digits of a given number.

3 To insert element in an existing array.

4 To display IP address of a system.

5 To sort an existing array.

6 To illustrate Method Overloading.

7 To create object for TreeSet and use all methods.

8 To check all math functions.

9 To generate random numbers between 50 and 100.

10 Program to create an applet to scroll a text message.

Section: B

11 To arrange the given string in ascending and descending order.

12 To illustrate Hybrid Inheritance.

13 To illustrate Thread Synchronization.

14 To create a object for Stack and all methods.

15 To calculate Tax using Interface.

16 To draw a human face using Applet.

17 To Demonstrate Custom Exeption.

18 To find various colleges under every University using packages.

4BC-5P: Python Lab

1. Program to demonstrate mathematical functions.
2. Program to calculate Body mass Index by accepting height and weight.
3. Program to demonstrate Bank transactions using class and objects.
4. Program to generate prime numbers and calculate CPU time using time module.
5. Program to generate different permutations of a given String using functions.
6. Program to demonstrate format specifiers of python by calculating interest and Principle amount for 'n' number of years.
7. Program to sort given numbers using selection Sort.
8. Program to convert temperature to Fahrenheit and vice versa using functions.
9. Program to find different areas of shapes using functions.
10. Program to find the occurrence of Character in a given file.
11. Program to generate Login Page UI using Tkinter.
12. Program to accept data from a Excel Sheet of temperature database and calculate the maximum and minimum temperature recorded using pandas.
13. Program to demonstrate list methods.
14. Program to demonstrate String methods in python.

4BC-7P: Mini Project

Project Work:

Students have to develop a mini project using a DBMS as back end tool and any GUI as a front end tool. Students should be divided into batches, each batch containing not more than four students. They should implement their projects in college in any RDBMS package available in the college.

The project carries 50 Marks (35 Marks for Main Examination + 15Marks for Internal Assessment)

FIFTH SEMESTER BCA

Syllabus

V Semester BCA							
Part	**Paper**	**Title**	**Hours**	**Marks**			**Credits**
				IA	**Exam**	**Total**	
Part-2	5BC-1T	Internet Technologies	4	30	70	100	4
	5BC-2T	Artificial Intelligence	4	30	70	100	4
	5BC-3T	Computer Networks	4	30	70	100	4
	5BC-4T	Web Application Development	4	30	70	100	4
	5BC-5T	Cloud Computing	4	30	70	100	4
	5BC-6P	Internet Technologies Lab	3	15	35	50	1
	5BC-7P	Web Application Development Lab	3	15	35	50	1
	5BC-8P	Simulation Project Lab	3	15	35	50	1
Part-3	MC4	Communicative English	2	15	35	50	1
		Total Marks & Credits		225	525	750	26

5BC-1T: Internet Technologies

Lecture Hrs : 54 Internal Marks : 20 Exam Marks : 80

Unit-I Web Page Designing **15 Hours**

HTML: list, table, images, frames, forms.What is CSS and CSS3, CSS syntax, CSS example, CSS comments, The id and selector class, Three ways to insert CSS, CSS background, CSS text, CSS fonts, CSS links, CSS lists, CSS tables, CSS box model, CSS border, CSS outline, CSS margin, CSS padding, XML: DTD, XML schemes, presenting and using XML.

Unit II: Scripting **8 Hours**

Java script: Introduction, documents, forms, statements, functions, objects; Event and event handling.

Unit – III JDBC and Database **6 Hours**

Introduction to JDBC, JDBC Drivers, java.sql package, Using Data Source Object to make a connection, JDBC Processing with Java.sql, ResultSet, JDBC Processing with Javax.sql, Connection Pooling, Transactions.

Unit-IV Web Servers and Servlets **8 Hours**

Tomcat web server, Introduction to Servlets: Lifecycle of a Servlet, JSDK, The Servlet API,The javax.servlet Package, Reading Servlet parameters, Reading Initialization parameters. The javax.servlet HTTP package, Handling Http Request&Response, .

Unit-V **15 Hours**

JSP Architecture, JSP life cycle, JSPscripting elements, JSP directive elements, JSP Standard action elements,Implcit objects, Error handling in JSP.

TEXT BOOKS

1. Web Technologies-Black Book,Kogent Learning Solution Inc Sol.
DreamTech Press.
2. Web Technologies,Uttam K Roy.

REFERENCE BOOKS

1. The complete reference Java 2.7th Edition by Patrick Naughton and Herbert Schildt TMH

5 BC-2T: Artificial Intelligence

Lecture Hrs : 54 Internal Marks : 20 Exam Marks : 80

Unit-I **9 Hours**

Introduction. What is AI? Definitions, Importance of AI, Applications. Knowledge and Knowledge Representation, PL

Unit - II **9 Hours**

Knowledge and Knowledge Representation. FOPL, Use and Rules, associative networks, Frames, Conceptual dependency and scripts.

Unit - III **9 Hours**

Inference using the different methods of representation of knowledge, PL and FOPL. Conversion to clausal form, Resolutions, Rules, Production system and inference, Inference in associative networks and frames.

Unit-IV **9 Hours**

Natural Language processing. Introduction, Grammars and basic parsing techniques

Unit-V **9 Hours**

Expert System. Introduction, Rule based and knowledge based knowledge acquisition Maintenance and manipulations.

Unit-VI **9 Hours**

Learning. Introduction, Different methods of learning. A brief Introduction to LISP.

TEXT BOOKS

1. Introduction to Artificial Intelligence and Expert Systems by Dan. W. Patterson, 3rd Edition, Pearson Publication.

REFERENCE BOOKS

1. Artificial Intelligence by Eleine Rich and Knight,3rd Edition,Mc Graw Hill Publication
2. Artificial Intelligence: Building Intelligent Systems by Joshi P (Author),3rd Edition, PHI Publication

Question Paper Pattern

Section A :	Answer any Ten out of Twelve questions	10 x 2 = 20
Section B:	Answer any Four out of Six questions	5 x 10 = 50
	Total	70 Marks

5BC-3T : Computer Networks

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I **9 Hours**

Objectives of Networking and Physical layer: Structure, architecture, standardization OSI model. Transmission on Media - Twisted pair, base band and broad band coaxial cable, fiber-optic, analog transmission, digital transmission, PSTN, transmission and switching.

Unit - II **9 Hours**

MAC Sublayer: LAN protocols, IEEE standards for LANs, Token Bus, Token Ring, fiber-optic networks, satellite networks.

Unit - III **9 Hours**

Data Link Layer: Design Issues, Error detection and correction, sliding window protocols, Data link Layer in Public networks.

Unit-IV **9 Hours**

Network Layer: Design Issues, Routing Algorithms-Optimality Principles, Shortest Path, Flooding, flow Based Routing, Broadcast routing, Congestion control algorithms, Internet working.

Unit-V **9 Hours**

Transport Layer and Session Layer: Design Issues, QOS, Primitives, Design Issues Remote procedure calls, session's layer in public networks.

Unit-VI **9 Hours**

Presentation Layer and **Application Layer:** Design Issues, Cryptography(Secret Key Algorithm-DES),FTP and management, e-mail

TEXT BOOKS

1. Computer Networks by Andrew S. Tanenbaum, Version 4th edition, Prentice Hall 2013

REFERENCE BOOKS

1. Computer Networks by James Martin, Pearson,2012
2. Computer Networks Computer Networking: A Top - Down Approach Paperback – 2012 by James F. Kurose (Author)

Question Paper Pattern

Section A :	Answer any Ten out of Twelve questions	10x 2 = 20
Section B:	Answer any Five out of Seven questions	5 x 10 = 50
	Total	70 Marks

5BC-4T Web Application Development

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I **9 Hours**

Introduction to .Net Framework and C#: The .Net Programming Frame work, .Net Languages, Common Language Run Time, The .Net Class Library Necessity of C#, Evolution of C#, Characteristics of C#, Applications, Structure of C# program, Name spaces, providing interactive inputs, multiple main methods, C# tokens, literals, variables, data types, value types, reference types, Boxing and Unboxing, for-each statement, Methods in C#, Handling Arrays.

Unit - II **9 Hours**

Classes and Objects: Defining a class, Adding Variables, Adding Methods, member access modifiers, creating objects, accessing class members, static members and static constructors, constant members and read-only members, properties, indexers, Delegates and Events.

Unit - III **9 Hours**

Data Access with .NET. ADO.NET overview, Using database connections, commands, The data reader, the dataset class, populating dataset class with a data adapter. The DataGridView Control, DataGridView Class Hierarchy, Data binding.

Unit-IV **9 Hours**

Developing ASP.NET Application and Web Controls ASP.NET Application, Code behind model, The Global. Asax application File, Understanding ASP.NET Classes, Web form Fundamentals. Basic Web control classes, Auto Post back and Web control Events, Assessing Web controls Using Visual Studio .NET.

Unit-V **9 Hours**

Validation and Rich Controls and State management. Validation Controls, Validation Process, Validation Classes, Server side Validation Classes, Manual Validation, Understanding Regular Expression, Custom Validation, View State, Transferring Information, Custom Cookies, Session State, Application State.

Unit-VI **9 Hours**

Master page , Themes, WCF: Creating master page, simple master page, nested master page, expanding themes, creating themes, applying themes at runtime, features of wcf , routing services, default configuration, creating and using web services, creating and using wcf services.

TEXT BOOKS

1. Programming in C# By E Balagurusamy, Fourth Edition(Tata McGraw Hill Publications)
2. Comdex .Net Programming Kit , Vikas Gupta, Fourth edition dreamtech puplication,
3. Asp.net Complete Reference , Mac Donald ,Tata McGraw Hill Publications

REFERENCE BOOKS

1. Professional C# 2005 by Christian Nagel and Others (Wrox Publications).
2. ASP.NET 3.5 Unleashed, by Stephen Walther SAMS Publishing.
3. Microsoft ASP.NET and AJAX: Architecting Web Applications, by Dino Esposito Microsoft Press.

Question Paper Pattern

Section A :	Answer any Ten out of Twelve questions	10 x 2 = 20
Section B:	Answer any Four out of Six questions	5 x 10 = 50
	Total	70 Marks

5BC-5T: Cloud Computing

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I: Understanding Cloud **9 Hours**

Origin and influences, A brief History, Definitions, Business Drivers, Technology Innovations , Clustering Grid Computing, Virtualization, Technology Innovations vs. Enabling Technologies, Roles and Boundaries , Cloud Consumer, Cloud Service Owner, Cloud Characteristics , On-Demand Usage , Ubiquitous Access Multitenancy (and Resource Pooling) , Elasticity , Measured Usage , Resiliency

Unit - II Cloud Delivery and cloud deployment models **9 Hours**

Cloud Delivery Models, Infrastructure-as-a-Service (IaaS) , Platform-as-a-Service (PaaS), Software-as-a-Service (SaaS), Comparing Cloud Delivery Models , Combining Cloud Delivery Models , *IaaS + PaaS , IaaS + PaaS + SaaS ,* Cloud Deployment Models . Public Clouds , Community Clouds, Private Clouds , Hybrid Clouds , Other Cloud Deployment Models

Unit - III Cloud Models **9 Hours**

Introduction, Storage as a service, Amazon storage services, Compute as a service Amazon elastic compute cloud(EC2) , Cloud System matrix, Platform as Service, Windoes Azure, Google Apps Engine, Amazon Web services, Software as a Service CRM as a service, sales force.com

Unit-IV :- Data Center **9 Hours**

Introduction to Data center, Virtualization, Standardization and modularity, Automation, Remote operation and management, Data center Security and facilities, Computing hardware, storage hardware, Network hardware, LAN fabric , SAN fabric, NAS gateways.

Unit-V : Cloud Virtualization Technologies **9 Hours**

Server Virtualization, Hypervisor based Virtualization, Hardware support Virtualization, VMware Virtualization software, Storage Virtualization, Hardware independence, Server Consolidation, Resource replication, Virtualization Management, Hypervisor clustering architecture.

Unit-VI: Using the Mobile Cloud **9 Hours**

Defining Mobile Market, Connecting to the cloud, Adopting mobile cloud application, Smart phones with the Cloud, Android, Apple iPhone, Black berry, Symbian, Windows mobile, Mobile web service , Mobile interoperability, Location awareness, Push Service, Using SMS, Defining WAP and other Protocol, Performing Synchronization

TEXT BOOKS

1. Cloud Computing: Concepts, Technology & Architecture **By Thomas Erl, Ricardo Puttini, Zaigham Mahmood, Publication : Prentice Hall 2013(4th Edition)**
2. Moving to Cloud by Dinkar Sitaram, Geetha Manjunath, Publication: Syngress Elsevier Inc, 2014(2nd Edition)
3. Cloud Computing Second Edition by Dr Kumar Saurabh, Publication Willy INDAI (2013)
4. Cloud Computing Bible by Barrie Sosinsky, Publisher Willy INDAI (2014)

Question Paper Pattern

Section A :	Answer any Ten out of Twelve questions	10x 2 = 20
Section B:	Answer any Five out of Seven questions	5 x 10 = 50
	Total	70 Marks

5BC-6P: INTERNET TECHNOLOGIES LAB

PART-A(QUESTIONS)

1. Design Student application form using HTML.
2. Write HTML script to design a web page where page is divided into 2 frames. One frameset displays list of products and other frameset describes about product when one particular product is clicked.
3. Create an html file by applying the different style sheet using external and internal style sheet.
4. Write CSS to demonstrate id selector.
5. Write JavaScript to add two numbers using GetElementById method.
6. Write JavaScript for Form validation-checking for number and letters.
7. Write JavaScript to demonstrate date object.
8. Write JavaScript to demonstrate objects.
9. Write JavaScript to see a cookie.
10. Write a Jsp code to get parameters using get parameter method.

PART-B(QUESTIONS)

1. Write a java Jsp code to implement verification of a particular user login and display a welcome page.
2. Write a java Jsp code which uses <jsp: plugin> tag to run an applet.
3. Write a java Jsp code to get student information through html and createa java bean class, populate bean and displaythe same information through anotherJsp.
4. Write a Jsp code to get student information from database stored in Mysql.
5. Insert a record to database using Jsp and Jdbc.

5BC-7P: Web Application Development LAB

PART A: C#

1. Write a C# program toaccept students register number,nameand 3 subjects marks and perform the following.

a)Display all student details with total marks.

b)Display student details whoscored highest marks

c)Display all student names in ascending order.

Design a system using class called book with a suitable members.

2. A bookshop maintains the inventory of books that is being sold. The List includes book title, author name,price and stack position. The shop keeper Performs following activities

a) Add new books to inventory

b) Add stock to existing stock

c) Search a particular book

d)Display stock details.

Design a system using class called inventory with a suitable members.

3. Write a program to create a class studentwith datamembers registernumber,name and three subject's marks.Set the values of the datamembers by using **indexers**.Calculate total marks ,averge and declare the class.Display all the information of the student with classs.

4. Write a Program to find sum and difference of two matrices using multicast delegates.

5. Write a Program to generate the first N even numbers and fobonacci numbers using events.

6. Create a database *Bank* in which create a table customer with fields *Account Number*, *Name*, *Account type* and *Total Balance*. Write a program to perform the following.

a) Display all the records of the customer table.

b) Display Account number and name of the customers whose account type is "SB"

c) Update the total balance by adding bonus amount Rs 500whose balance is greater than or equal to 10,000.

7. Create a database *Emp* in which create a table customer with fields *Employee Id*, *Name*, Designation and *Basic Salary*. Write a program to perform the following.

a) Display all the records of the Emp table.

b) Display number of records present in the table

c) Display the details of the employee who has highest basic salary.

8. Write a program to create a dataset company and perform the following

a) Add the table employee manually.

b) Retrieve the table Department from physical database and store in the Dataset.

c) Display the all contents of the company dataset.

PART B: ASP.NET

9. Create Student feedback form about courses and store the details in a database and display feedback details inDataGridView control.

10. Write a program containing the following controls:
ListBox, Button, Image and Label.
The listbox is used to list products available in a store. When the user clicks the button
respective image will display on Image control and the cost of the selected product will be displayed on the label control**.**

11. Create a Login user page by using ***Login*** Control. If the login is successful display user name and password in another page. If the user attempts login three times block the login control.

12. Create a web page with textboxes for customer name, meter number, current reading and previous reading. Put required field validator and Compare validators. Calculate units consumed and total amount and display the same in another page.

5BC-8P: Simulation Project Lab

Project Work: One of the case studies can be taken and developed as a project. Student should be divided into number of batches, each batch containing not more than 3 students. The project carries 5**0 Marks (35 Marks for Main Examination + 15Marks for Internal Assessment**)

SIXTH SEMESTER BCA

Syllabus

VI Semester BCA							
Part	**Paper**	**Title**	**Hours**	**Marks**			**Credits**
				IA	**Exam**	**Total**	
Part-2	6BC-1T	TCP/IP	4	30	70	100	4
	6BC-2T	Network Security	4	30	70	100	4
	6BC-3T	Mobile Computing and Wireless Technologies	4	30	70	100	4
	6BC-4T	Object Oriented Analysis and Design	4	30	70	100	4
	6BC-5T	Business Analytics	4	30	70	100	4
	6BC-6P	Business Analytics Lab	3	15	35	50	1
	6BC-7P	Project Work	6	30	70	100	2
Part-3	MC5	Environmental Science	2	15	35	50	1
		Total Marks & Credits		**225**	**525**	**750**	**26**

6BC-1T : TCP/IP

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I **9 Hours**

TCP/IP: Origin, layering, Internet address, port numbers, DNS, client-server model, API, Link Layer, SLIP, MTU.

Unit - II **9 Hours**

Internet Protocol: IP header, routing, subnet addressing, masks, example of subnet, ARP introduction, ARP cache, ARP, RARP-RARP packet format, examples, server design.

Unit - III **9 Hours**

ICMP: message types, Ping program and trace execute program.

Unit-IV **9 Hours**

IP and Dynamic Routing: Routing principles, dynamic routing, RIP, OSPF, BGP, CIDR, User datagram protocol, IGMP, DNS, FTP and BOOTP.

Unit-V **9 Hours**

TCP: Header, TCP connection establishment and termination, Interactive data flow, bulk data flow time out and transmission.

Unit-VI **9 Hours**

Telnet and Remote login, File Transfer Protocol, SMTP, other application

TEXT BOOKS

1. Internetworking with TCP/IP by Comer. Douglas E ComerPublisher: Pearson (Intl)Copyright year: © 2014,Edition: 6th

REFERENCE BOOKS

1. TCP/IP Illustrated Vol. 1 by Richard Stevens (Addison Wesley 1999 (Reprint).
2. Compute Communication and Networks by Freer J. R. by Springer

Question Paper Pattern

Section A :	Answer any Ten out of Twelve questions	10x 2 = 20
Section B:	Answer any Five out of Seven questions	5 x 10 = 50
	Total	70 Marks

6BC-2T: Network Security

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I **9 Hours**

Planning for Security: Introduction; Information Security Policy, Standards, and Practices; The Information Security Blue Print; Contingency plan and a model for contingency plan

Unit - II **9 Hours**

Security Technology-1: Introduction; Physical design; Firewalls; Protecting Remote Connections

Unit - III **9 Hours**

Cryptography: Introduction; A short History of Cryptography; Principles of Cryptography; Cryptography Tools; Attacks on Cryptosystems.

Unit-IV **9 Hours**

Introduction to Network Security, Authentication Applications: Attacks, services, and Mechanisms; Security Attacks; Security Services; A model for Internetwork Security; Internet Standards and RFCs Kerberos, X.509 Directory Authentication Service.

Unit-V **9 Hours**

Electronic Mail Security: Pretty Good Privacy (PGP); S/MIME Hours IP Security: IP Security Overview; IP Security Architecture; Authentication Header; Encapsulating Security Payload; Combining Security Associations; Key Management.

Unit-VI **9 Hours**

Web Security: Web security requirements; Secure Socket layer (SSL) and Transport layer Security (TLS); Secure Electronic Transaction (SET)

TEXT BOOKS

1. Michael E. Whitman and Herbert J. Mattord: Principles of Information Security, 2nd Edition, Cengage Learning, 2005.

2. William Stallings: Network Security Essentials: Applications and Standards, 3rd Edition, Pearson Education, 2007.

REFERENCE BOOKS

1. Behrouz A. Forouzan: Cryptography and Network Security, Special Indian Edition, Tata McGraw-Hill, 2007.

Question Paper Pattern

Section A :	Answer any Ten out of Twelve questions	10 x 2 = 20
Section B:	Answer any Four out of Six questions	5 x 10 = 50
	Total	70 Marks

6 BC-3T: Mobile Computing and Wireless Communications

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I **9 Hours**

Mobile Computing Architecture:

Types of Networks, Architecture for Mobile Computing, 3-tier Architecture, Design Considerations for Mobile Computing.

Unit - II **9 Hours**

Global Systems for Mobile Communication (GSM):

GSM Architecture, Entities, Call routing in GSM, PLMN Interface, GSM Addresses and Identities, Network Aspects in GSM, Mobility Management, GSM Frequency allocation.

Unit - III **9 Hours**

SMS(Short Message Service):

Mobile computing over SMS, Short Message Service, Value Added Services through SMS.

Unit-IV **9 Hours**

GPRS (General Packet Radio Service):

GPRS and Packet Data Network, GPRS Network Architecture, GPRS Network Operations, Data Services in GPRS, Applications for GPRS, Billing and Charging in GPRS.

Unit-V **9 Hours**

CDMA(Code Division Multiple Access), 3G ,4G:

Spread Spectrum technology, IS-95, CDMA versus GSM, Wireless Data, Third Generation Networks, Applications on 3G, Fourth Generation Networks, Difference between 3G and 4G.

Unit-VI **9 Hours**

Mobile client:

Moving beyond desktop, Mobile handset overview, Mobile phones and their features, PDA, What is Android, Architecture of Android Application, Features of Android.

TEXT BOOKS

1. Dr. Ashok Talukder, MsRoopaYavagal, Mr. Hasan Ahmed: Mobile Computing, Technology, Applications and Service Creation, 2d Edition, Tata McGraw Hill, 2010.

REFERENCE BOOKS

1. Raj kamal: Mobile Computing, Oxford University Press, 2007.
2. ItiSahaMisra: Wireless Communications and Networks, 3G and Beyond, Tata McGraw Hill, 2009.

Question Paper Pattern

Section A :	Answer any Ten out of Twelve questions	10 x 2 = 20
Section B:	Answer any Four out of Six questions	5 x 10 = 50
	Total	70 Marks

6BC-4T: Object Oriented Analysis and Design

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I **9 Hours**

An Introduction to Objects Technology: The traditional approach, Object Technology Basics, Abstraction, Encapsulation, OOAD Methods.

Unit - II **9 Hours**

Modeling Techniques: Modeling, Object Model, Dynamic model, Functional model.

Unit - III **9 Hours**

The Analysis Phase: What is Analysis, Steps in the Analysis Phase, Library Management System (LMS) a case study, Characteristics of Analysis phase, and Overview of other OOA methods.

Unit-IV **9 Hours**

The Design phase: What is Design, Aims of the Design Phase, Points to remember in Design Phase, Characteristics of the Design phase, Example of a Design Class, Concepts of Components, Design Phase for Modern Applications, Design Guidelines, The Design Document, Design Document-A Case Study, Overview of OOD methods.

Unit-V **9 Hours**

Object Oriented Programming and Testing: Programming with Objects, OOP Considerations, Generals Guidelines, and Programming Language Support for Object Orientation. Testing considerations, Testing Object oriented models, object oriented testing techniques, Designing test cases, Class testing, Interclass testing.

Unit-VI **9 Hours**

Object oriented Databases and Introduction to UML: Object oriented technology and RDBMS, OODBMS. What is UML, UML Terminology, Things in UML, Relationships in UML, Diagrams.

TEXT BOOKS

1. Atul Kahate: Object Oriented Analysis and Design, Mc Graw Hill Publication.

REFERENCE BOOKS

1. Grady Booch et al: Object-Oriented Analysis and Design with Applications, 3rd Edition, Pearson Education, 2007.

2. Michael Blaha, James Rumbaugh: Object-Oriented Modeling and Design with UML, 2nd Edition, Pearson Education, 2005.

Question Paper Pattern

Section A :	Answer any Ten out of Twelve questions	10 x 2 = 20
Section B:	Answer any Four out of Six questions	5 x 10 = 50
	Total	70 Marks

6BC-5T Business Analytics

Lecture Hrs : 54 Internal Marks : 30 Exam Marks : 70

Unit-I: **9 Hours**

Business enterprise Organization, Its functions and core business processes ,Key purpose of IT in Business, Enterprise application(ERP/CRM.etc),Characteristics of Internet ,Information users and their requirements.

Unit - II : **9 Hours**

Introduction , Getting to know structured data-Characteristics, where does it come from, hassle free retrieval, unstructured data-How to manage, How to store, How to extract, semi structured data- How to manage, How to store, How to extract, model, difference between semi structured and structured data.

Unit-III : **9 Hours**

OLTP-Queries, advantages, challenges, OLAP-one dimensional, two dimensional, three dimensional data, different OLAP architecture, Data models of OLTP and OLAP, Role of OLAP tools in BI architecture, LAP operations on multidimensional data.

Unit – IV: **9 Hours**

Need for Data warehouse, Definition of Data warehouse ,Data Mart, Then an ODS,Goals of Data Date Warehouse, Goals of Data Warehouse, Constituents a Data warehouse, Data sources, Data mapping, Data staging, Data Integration, Data Integration Technologies, Data qualities, Data profiling, A case study from the health care domain.

Unit-V : **9 Hours**

BI component frame work-Business layer, operation layer, Implementation Layer.BI for management, process improvement, performance improvement, Customer experience improvement, BI-users, Managing and maintenance of BI systems Managing operations for business continuity

Unit-VI: **9 Hours**

Decision Making System,how to summarize,analyse and interpret data to facilitate decision making, Categorical and Numerical Data, Statistical Analysis ,Statistical Tests.

Text Book

1. Fundamentals of Business Analytics- :R.N.Prasad and Seema Acharya

REFERENCE BOOKS

2. Business Analytics an application focus :R.Ohri
3. Business Intelligent and Analytical Systems :R.Sharda, D.Delen & E .Turban,

6BC-6P Business Analytics LAB

a) Retrieve a file to excel.
b) Graphic displays for qualitative data (Pareto diagrams, Dotplots and Histograms).

2. NUMERICAL PRESENTATION OF UNIVARIATE DATA

a) Measures of central tendency and dispersion (mean, median, mode and midrange).
b) Frequency Distributions.
c) Box-And-Whisker Display.

3. PRESENTATION OF BIVARIATE DATA

a) Tabular presentation of Bivariate data (Pivot table & chart, scatter diagrams).
b) Interpretation of the correlation coefficient.
c) Linear Regression.

4. RANDOM NUMBERS AND PROBABILITY

a) Random numbers generation.
b) The Binomial Probability Distribution.
c) Cumulative Probabilities.

5. ESTIMATION AND HYPOTHESIS TESTING

a) Confidence Intervals.
b) Hypothesis Testing.

6. ANALYZING THE POPULATION PROPORTION

a) Z-estimate and T-estimate proportion.
b) Confidence Intervals.

6BC-7P: Project Work LAB

Project Work. Students should develop a project in a group of two members. They should implement their projects in college using advanced RDBMS package and advanced technologies like .NET and J2EE. The students have to collect data outside practical hours. Project may be taken outside but must be implemented in the college. Internal marks can be awarded by the guide by evaluating the performance of the students during the course of project work.

The project carries **100 Marks (70 Marks for Main Examination + 30 Marks for Internal Assessment**) and **100 marks** is distributed as follows

1. Demonstration & Presentation	20 Marks
2. Design and Coding	30 Marks
3. Viva-voce	10 Marks
4. Project-Report	10 Marks
	Total: 70 Marks

MANDATORY PAPERS - NON CORE

Syllabus

MC1:INDIAN CONSTITUTION AND HUMAN RIGHTS

Lecture Hrs : 54 **Internal Marks : 30** **Exam Marks : 70**

Course objective :

The syllabus covers all the basic concepts of IC. If a student decides to pursue his/her career in Politics and Public sector s/he will have the knowledge that is necessary. No matter what course a student pursues, IC is essential for all business and service sectors. It will equip them for competitive exams like KAS and IAS.

Unit-I: Introduction **12 Hours**

Salient Features of Indian Constitution,Preamble,Fundamental Rights and undamental Duties,Directive Principles of State Policy,Amendment of the Constitution

Unit - II : The Legislature and Executive **12 Hours**

Lok Sabha and Rajya Sabha – Composition, Powers and Functions,Law-making Process President - Election Procedure, Powers and Functions,State Governor – Powers and Functions,Prime Minister and Chief Minister– Powers & Functions

Unit-III : The Judiciary **12 Hours**

The Supreme Court - Composition, Powers and Functions,High Court - Composition, Powers and Functions,Judicial Activism and Public Interest Litigation

Unit-IV : Party System and Electoral Process **6 Hours**

Party System in India,Election Commission – Powers and Functions,Electoral Reforms

Unit-v : Human Rights and Accountability **12 Hours**

Meaning, Scope and Importance,Protection of Human Rights:National Human Rights Commission,State Human Rights Commissions,Non-Governmental Organizations,Accountability in public life,Right to Information Act, 2005

REFERENCE BOOKS

1.Durga Das Basu; Introduction to the Constitution of India, Prentice – Hall of India Pvt. Ltd., New Delhi

2. M.V. Pylee; Indian Constitution

3. Durga Das Basu; Human Rights in Constitutional Law, Prentice – Hall of India Pvt. Ltd., New Delhi

4. K.K.Ghai; Indian Constitution, Kalyani Publishers

5. Granville Austen ; Working of the Indian Constitution

MC2:Human Resource Management

Lecture Hrs : 28 Internal Marks :15 Exam Marks : 35

Unit-I: Introduction to Management and HRM **10 Hours**

Definition of Management , Principles and Levels of Organization-Functions of Management meaning , Importance, Objectives and Functions of Human Resource Management – Nature and scope of Human Resource Management – Systems of HRM- Duties and of Responsibilities of Human Resource Manager

Unit - II : Human Resources Planning **8 Hours**

Meaning and Importance's of Human Resource Planning- factors affecting Human Resource planning-Demand and Supply Forecasting- Estimating the net Human Resource requirement.

Unit-III : Recruitment and Selection **10 Hours**

Meaning and Objectives of Recruitment – Factors affecting Recruitment applicant pool- Methods of Recruitment- Methods and objective of Selection – Process of Selection- Uses of test in Selection – Placement- Problems in making effective Placement.

Text Book

REFERENCE BOOKS

- Biswananth Ghosh- Human Resource Development and Management, 2004,Vikas Publishing House.
- Subba Rao- Personnel and Human Resource Management
- Aswathappa K- Human Resource Management
- Richard Rudman- Performance planning and Review, 2003, Allen and Unwin
- Allen B.Clardy – Managing Human Resources – Exercises, Experiments and Applications Work book – Lawrence Erlbaum Assoicates,1996.
- Cases In HRM- Dr. D.Gopal Krishna – 2014, IK International Publishers, New Delhi.
- Rudra Basavaraj- Personnel management in India.
  VSP Rao- Human Resource Management Text and Cases.

END SEMESTER EXAMINATION PATTERN

Part A: Multiple choice questions 15 x 1 = 15 marks

Part B: Four to be answered from Six questions 4 x 5 = 20 marks

The distribution of marks for the CONTINUOUS INTERNAL ASSESMENT

1.Test (5+5) 10 marks

2.Attendance 05 marks

Total 15 marks

MC3:VALUE EDUCATION

Lecture Hrs :28 Internal Marks : 15 Exam Marks : 35

Objectives: Values are timeless truths. They represent norms of decency; civility and righteous conduct which are handed down from generation to generation. We imbibe the right values from our elders, parents and teachers. However for a variety of reasons, value systems are under threat today, necessitating the need to introduce Value Education as a paper to be taught in the classroom.

Unit I: Introduction **9 Hours**

Definition, Concept and Classification of Values
Need for Value Education
Challenges of Value Adoption

Unit II:Personality Development and Values of Life **10 Hours**

Leadership qualities.
Principles of Integrity, Character Development , Self-Confidence and Self-Esteem.
Values in everyday life.
Timeless Truths/ good character qualities – Honesty, Trust, Morality, Integrity, Reliability, Empathy , Forgiveness- Love.

Unit III: Values in Society **9 Hours**

Time Management/ Social Commitment.
Environmental Awareness/ Civic Sense
Positive thinking and emotional maturity.

REFERENCE BOOKS

1) M.G.Chitakra, *Education and Human Values*, A.P.H. Publishing Corporation, New Delhi, 2003.
2) NCERT, *Education in Values*, New Delhi, 1992.
3) Swami Budhananda, *How to Build Character: A Primer*, Ramakrishna Mission, New Delhi, 1983.
4) Swami Vivekananda, *Youth and Modern India*, Ramakrishna Mission, Chennai.
5) M.K.Gandhi, *My Experiments with Truth*, Navjivan Publishing House, Ahmedabad.
6) Rameshwari Pandya & Anuradha Mathur, *Imbibing Value Education: Various Perspectives*, Kalpaz Publications, New Delhi, 2003.
7) Dhankar, N, Value Education, A.P.H. Publishing Corporation, New Delhi, 2010.

END SEMESTER EXAMINATION PATTERN

Part A:Multiple choice questions 15 x 1 = 15 marks
Part B:Four to be answered from Six questions 4 x 5 = 20 marks

The distribution of marks for the CONTINUOUS INTERNAL ASSESMENT

1.Test (5+5)10 marks
2.Attendance05 marks
Total 15 marks

MC4: Commutative English

Part A: Listening Skills	16 Hours
Phonetics—Vowel Sound	4 Hours
Consonant Sounds	4 Hours
Academic Listening	4 Hours
Ted Talks and Short Speeches	4 Hours
Part B: Speaking Skills	6 Hours
Pick And Speak	2 Hours
Debate	2 Hours
Panel Discussion	2 Hours
Group Discussion	2 Hours
Part C: Academic PPT Presentation Skills	6 Hours
Total no of teaching hours	**28 Hours**

Scheme of evaluation

Internal Assessment marks		**Presentation skills in group (30 minutes duration)**	
1.Test	05 marks	PPT	05 marks
2.Attendance	05 marks	Structure of the	05 marks
3.Presentation	05 marks	Non-verbal Communication	05 marks
		Creativity	05 marks
		Group Dynamics	05 marks
		Time Management	05 marks
		Ability to answer questions	05 marks
Total	**15 Marks**	**Total**	**35 Marks**

MC5:Environmental Science

Lecture Hrs :28 Internal Marks : 15 Exam Marks : 35

Unit-I: Multi-Disciplinary Nature Of Environmental Studies **2 Hours**

Definition, Scope and Importance Need for public awareness

Unit - II : Natural resources and associated problems **8 Hours**

Forest resources: use and importance, deforestation with one case study. Timber extraction, mining, dams and their effect on forests

Water resources: Use and over utilization of surface and ground water, floods, droughts, conflict over dams, -advantages and disadvantages.

Mineral resources; Use and exploitation, Environmental effectson extraction of minerals with case study.

Energy resources: Renewable and non renewable energy sources, use of alternate energy sources and case study.

Unit-III : Bio diversity and its conservation **6 Hours**

Introduction, definition, value of bio diversity – consumptive use, productive use, social, ethical, aesthetic and option values, hot spots of biodiversity.

Threats to biodiversity: Endangered and endemic species of India, Red Data book

Conservation of biodiversity: In-situ and Ex-situ Conservation of biodiversity.

Unit – IV: Environmental pollution **6Hours**

Definition, causes, effects and control measures with one case study of

1) Air pollution 2) Water pollution 3) Soil pollution 4) Noise pollution and

5) Radioactive pollution

Unit-V : Social issues and Environment **8 Hours**

From unsustainable to sustainable development ,Urban problems related to energy

Water conservation ,Rain water harvest ,Watershed management ,Solid waste management ,Global warming , Acid rain ,Depletion of Ozone layer , Nuclear accidents ,Environment protection Act: Air, Water, Wildlife and forest conservation Act

REFERENCE BOOKS

- A text book on Environmental studies – Dr D.K.Asthana, Dr Meera Asthana.
- A text book on Environmental studies – B.S.Raman.
- A text book on Environmental studies – Dr N.Nandini.
- A text book on Environmental studies – Dr J.P.Sharma
- MCQs on Environmental studies – Dr D.K.Asthana, Dr Meera Asthana.
- Parisara Adhyayana – Dr T.Devaraj.
- Parisara Adhyayana – Byrappa.
- Rameshwari Pandya & Anuradha Mathur, *Imbibing Value Education: Various Perspectives,* Kalpaz Publications, New Delhi, 2003.

Dhankar, N, Value Education, A.P.H. Publishing Corporation, New Delhi, 2010.

END SEMESTER EXAMINATION PATTERN

Part A: Multiple choice questions 15 x 1 = 15 marks

Part B: Four to be answered from Six questions 4 x 5 = 20 marks

The distribution of marks for the CONTINUOUS INTERNAL ASSESMENT

1.Test (5+5) 10 marks

2.Attendance 05 marks

Total 15 marks

Scheme of Evaluation

Scheme of Evaluation for Internal Assessment

Two tests must be scaled down to 10 Marks each.

Sl.No.	Marks secured in the test	Marks to be allotted
1.	1 to 6	02
2.	7 to 12	04
3.	13 to 18	06
4.	19 to 24	08
5.	25 to 30	10

Attendance: 75% & Above

Sl.No.	Attendance secured in Percentage	Marks to be allotted
1.	96 – 100%	05
2.	91-95%	04
3.	86 to 90%	03
4.	81 to 85%	02
5.	75 to 80%	01

Theory

Sl.No.	Procedure	Max.Marks 30
1.	Average of two tests	20
2.	Assignments or Seminar	05
3.	Attendance	05

Practical
Programming Lab

Sl.No.	Procedure	Max. Marks 15
1.	Writing one program	04
2.	Execution of program	05
3.	Viva-voce	03
4.	Attendance	03

Project Work

Sl.No.	Procedure	Max. Marks 15	Max. Marks 30
1.	Demonstration & Presentation	04	08
2.	Design and Coding	05	10
3.	Viva-voce	03	06
4.	Attendance	03	06

Scheme of Evaluation for End Semester Practical Examination

Programming Lab

Sl.No.	Procedure	Max. Marks 35
1.	Writing two programs (one from each section)	10
2.	Execution of program	16(One program)
3.	Viva-voce	06
4.	Record	03

Project Work

Sl.No.	Procedure	Max. Marks 35	Max. Marks 70
1.	Demonstration & Presentation	10	20
2.	Design and Coding	15	30
3.	Viva-voce	05	10
4.	Project-Report	05	10