

**BCA - II SEMESTER
(W.E.F 2014-15 ONWARDS)**

Subject Code	Subject Title	Teaching Scheme Hrs/week		Examination			
				Exam. Duration (Hrs)	Marks		
		Theory	Practical		Theory/ Practical	IA	Total
14BCACALT21(A)	Calculus	4	--	3	80	20	100
14BCAACMT21(B)	Accounting management	4	--	3	80	20	100
14BCAMILT22	MIL	4	--	3	80	20	100
14BCASTAT23	Statistics	4	--	3	80	20	100
14BCADSCT24	Data Structures Using C	4	--	3	80	20	100
14BCAHRET25	Human Rights and Environmental Studies	4	--	3	80	20	100
14BCASTAP26	Statistics Lab using SPSS	--	4	3	80	20	100
14BCADSCP27	Data Structures Using C Lab	--	4	3	80	20	100

14BCACALT21 (A): Calculus

Total: 50 Hours

Unit 1: Measurements of angles, Trigonometric Functions, Allied Angles, Functions of Compound angles, Heights and Distances. **10 Hrs**

Unit 2:Complex Numbers: Definition, real and imaginary parts, modulus and amplitude, equality of complex number, Algebra of complex numbers, polar form, De'Moiver's Theorem, Roots of a complex numbers and their representation in Argand diagram. **10 Hrs**

Unit 3: Continuity:Definition of Limit, Some Standard Limits (without Proof), Definition of Continuity, Condition for function to be continuous, Discontinuity. **10 Hrs**

Unit 4: Differentiation: Definition of derivatives, Rules of differentiation(without proof), Derivatives of algebraic, trigonometric functions, Second order derivatives with examples. **10 Hrs**

Unit 5: Integration: Definition of Integration, Standard formulas, Partial fraction method, Integration by parts, Definite integral, Area bounded by plane curves. **10 Hrs**

Text Book:

1. Differential calculus by ShantiNarayan
2. Textbook of Mathematics by Umarani & Umarani

Reference:

1. A text of trigonometry by S.Narayan, S.Vishwanath
2. Calculus and analytical geometry G.B.Thomas and finney,nrason publication 1977.

14BCAACMT21(B):ACCOUNTING MANAGEMENT

Total: 50 Hours

Unit I: Management Accounting: Nature, Scope, financial Accounting, Cost Accounting and Management Accounting, Advantages and limitations of Management Accounting

8 Hrs

Unit II: Financial Analysis: Financial statements and their limitations, concepts of financial analysis and tools of financial analysis, Ratio Analysis – Nature and interpretation; classification of ratios.

10 Hrs

Unit III:Cost Accounting: Meaning, Objectives and functions of cost accounting, Cost Accounting Vs Financial Accounting, Preparation of Cost Sheet

10 Hrs

Unit IV: Material Control: Meaning and objectives of Material costing, calculation of different stock level, EOQ Problem, Methods of Pricing issue, LIFO, FIFO

12 Hrs

Unit V: Labour Costing: Meaning and objectives of labour cost, labour turnover ratio, wage payment methods, Taylor's Piece, rate system, Halsay and Rowen Plan

10 Hrs

Text Books

1. Accountancy by M. B. Kadakol, PUC 2nd year
2. Cost Accountancy by Dr. G. B. Baligar
3. Management Accounting by Dr. M. N. Arora, Himalaya Publishing House

14BCASTAT23: BASIC STATISTICAL METHODS

Total: 50 Hours

Unit-I : Introduction and statistical Investigation :

Origin and development, Definition, Importance and scope of business Statistics, Meaning and definition of data, Methods of data collection. Type of data (primary , secondary, dichotomous, continuous, nominal, categorical, ordinal, etc.); proportions, ratios and rates; building, cleaning and administering databases in SPSS (including defining, computing, selecting and recoding variables for data analyses).

8hrs

Unit-II: Presentation of data, Diagrammatic and Graphical Representation:

Definition of Classification, Objectives of classification, Types of classification, Formation of a Discrete Frequency Distribution and Formation of continuous frequency Distribution. Definition of tabulation, objectives of tabulation, parts of table. *Significance* of diagrams and graphs, Types of diagrams-one dimensional or Bar Diagrams, Two dimensional or area diagrams, pictograms and cartograms. Graphs of frequency distribution-Histogram, frequency polygon, Frequency curve, gives or cumulative frequency curves.

8hrs

Unit-III: Measures of central tendency and Measures of dispersion:

Definition of averages, objectives of averages, requisites of ideal averages. Types of averages- A mean, median, Mode, Harmonic mean, Geometric Mean – Definition computation, merits and demerits, Application in Business. Definition and properties of Ideal Measure of dispersion, Absolute and Relative Measures of dispersion-Range and co-efficient of range, Quartile and co-efficient of Q.D., Average Deviation(AD) and co-efficient of A.D., Standard Deviation and co-efficient of S.D. and co-efficient of variation.

12hrs

Unit-IV: Correlation and regression:

meaning and definition, types of correlation, methods of studying correlation- Scatter diagram method, Karlpearson's co-efficient of correlation, Spearman's Rank correlation coefficient. properties of correlation co-efficient. Meaning and definition of regression,

regression equations, difference between correlation and regression, construction regression equations with simple examples.

10hrs

Unit-V: Time series analysis

Meaning and Definition of Time series, Uses and objectives, components of Time series - Trend, Seasonal variation, Cyclic variation and Irrigular variation their detail study. Additive and Multiplicative models. Methods of measurement of Time series-Moving averages (3, 4 and 5 yr), link relative method and Least square method

12hrs

References:

- Medhi J. 1992, Statistical Methods (An Introductory Text), New Age International.
- Business Statistics by - J K Sharma , Pearson Publication.
- upta S. C.and Kapoor V. K. 2005 Fundamentals of Mathematical Statistics, S. Chand and Sons, New Delhi.
- upta S. C.and Kapoor V. K. 2005 Fundamentals of Applied Statistics, S. Chand and Sons, New Delhi.
- oss S. M. 2006 A First Course In Probability 6th Edition, Pearson publication.

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14BCADSCT24: DATA STRUCTURES USING C

Total: 50 Hours

Unit I: Structure and union: Structure definition, giving values to members, structure initialization, comparison of structure variables, arrays of structure, self-referential structures, union. **Pointers:** Understanding pointers, accessing the address of variables, Declaring and initializing pointers, accessing a variable through its Pointer. **Dynamic memory allocation:** Meaning of static and dynamic memory allocation. Memory allocation functions: malloc(), calloc(), free() and realloc(). **Files:** Introduction, definition, Basic file operations: Naming a file, opening a file, Reading data from file, writing data to a file and closing a file, Input/Output operations on files, Error Handling in files, Random Access to files.

12 Hrs

Unit II: : Introduction to Data Structures & Stack: Definition, Applications, Classification of data structures: primitive and non primitive, Operations on data structures Definition, Array Implementation of stack(using structure) and operations on stack, Applications of stacks, Infix, prefix and postfix notations, Conversion of an arithmetic expression from Infix to postfix.

10 Hrs

Unit III: Queue and Recursion: Definition, Types of queue: Simple queue, circular queue, double ended queue, priority queue, Array Implementations of queue (using structure) and operations on all types of queues. Definition, Recursion in C, Writing Recursive programs – Binomial coefficient, Fibonacci, GCD, towers of Hanoi.

10 Hrs

Unit IV: Linked list: Definition, components of linked list, Representation of linked list, Advantages and disadvantages of linked list, Types of linked list: singly linked list, doubly linked list, Circular list and circular doubly linked list, operations on all types of linked lists: Creation, insertion, deletion, search and display.

10Hrs

Unit V Tree: Definition: Tree, Binary tree, complete binary tree, Binary search tree, Tree terminology: root, Node, Degree of a node, ancestors of a node, Binary tree, Array representation of tree, Creation of Binary tree, Traversal of Binary tree: Preorder, In order and post order.

08 Hrs

Text books:

1. Langsam, Augenstein and Tenenbaum, Data structures Using C and C++, Prentice Hall of India, 2nd Edition.
2. Kamthane : Introduction to Data structures in C Pearson Education.

References:

1. Weiss Data structures and Algorithm Analysis in C II Edition , Pearson Education.
2. Lipschutz Schaum's outline series Data structures Tata McGraw-Hill.



14BCAHRET25: Human Rights and Environmental Studies

Total: 60 Hrs

Section A: Environmental Studies

Nature of environmental studies:

5 Hours

Definitions, scope and importance, Multimedisciplinary nature of environmental studies ,need for public awareness. Natural resources and associated problems: (a) Forest resources : Use and over exploitation, deforestation timber extraction , mining , dams and their effects on forests and tribal people (b) Water resources : Use and over utilization of surface and ground water ,floods, drought, conflicts, over water, dams-benefits and problems (c) Mineral resources use exploitation, environmental effects of extracting and using mineral resources (d) Food resources: World food problems , changes caused by agriculture effects of modern agriculture, fertilizer problems(e) Energy resources : growing energy needsm renewable and non renewable energy sources , use of alternate energy sources (f) land resources: land as resources, and land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources Equitable use of resources for sustainable lifestyles.

Ecosystem:

3 Hours

concepts of an ecosystem ,structure and function of an ecosystem , Production , consumers and decomposers, Energy flow in the echo system , Ecological succession , Food chains, food webs abd ecological pyramids, Introduction , types Characteristics features , structures and functions of the following echosystem (a) Forest echosystem (b) Grassland echosystem(c) desert echosystem (d) Aquatic echo system (ponds , streamsm lakes, rivers, oceans, estuaries).

Biodiversity and its conservation:

5 Hours

Introduction –definition: Generic, species and echo system diversity , biogeographical classification of India, Value of biodiversity : consumptive use, productive use, social , ethical ,aesthetic and option value , Biodiversity at global , national and local levels, India as a mega diversity nation, Western ghat as a bio-diversity, Hot spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts , Endangered and endemic species of India , Conservation of biodiversity: In situ and ex-situ , conservation of biodiversity.

Environmental Pollution:**5 Hours**

Definition causes, effects and control measures of a) Air pollution(b) Water pollution (c) Soil pollution(d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards, Solid waste management : causes , effects and control measures urban and industrial wastes, Role of an individual in prevention of pollution , Disaster management : Food earthquake, cyclone and landslides, Tsunami.

Social issues and Environment:**3 Hours**

From Unsustainable to Sustainable development , urban problems related to energy , Water conservation, rain water harvesting, watershed management, Resettlement and rehabilitation of people ;its problems and concerns , Environmental ethics; Issues and possible solutions , climate change, global warming , acid rain, ozone layer depletion, nuclear accidents and holocaust, Wasteland reclamation , consumerism and waste products , Environment protection Act, air (Prevention and control of pollution) act Water (Prevention and control of pollution) Act, Wildlife protection act, Forest conservation Act, Issues involved in enforcement of environmental legislation public awareness.

Human Population and the Environment:**6 Hours**

Population growth , variations among nations, Population explosion, family welfare programming, Environment and human health, value Education , women and child welfare, Role of information technology in environmental and human health.

Field work:**3 Hours**

Visit to a local area to document environmental assets river /forest/grassland/hill/mountain, Visit to a local polluted site Urban/Rural/Industrial/Agricultural, study of common plants , insects, birds, study of simple ecosystem ponds, river, hill slopes ,etc.

References

- 1 S. Sinha , M. Shukla & R Shukla , text book of Environmental studies AITBS Publishers, Delhi
2. Agarwal K.C 2001 environmental Biology Nidi Publi Ltd. Bikaner.
3. Trivedi R.K. Handbook of Environmental laws , rules ,guidelines, omliances and science.
4. Trivedi R.K. and P.K. Goel introduction to air pollution , Techno-science publications.
5. Down to earth centre for science and Environment.

Section B: Human Rights

Unit 1:

10 Hours

Nature of human rights, origin and development of the concept of Human Rights, Functions of Human rights in modern society, Human rights and democratic governance; limitations of Human rights;

Unit 2:

10 Hours

Classification of Human rights, Civil and political Rights-Nature and functions : Social and Economics Rights ; Right of vulnerable groups such as women, children minorities, triable and the disabled , Constitutional incorporation of Human rights in India.

Unit 3:

10 Hours

Enforcement of human rights-basic principles governing enforcement of human rights at national , regional and International levels , national Human rights , Commission-Organization, functions and powers.

References:

H.O. Agarwal-Human Rights, Central law publications, Allahabad.

Durga Das basu –Human rights in Constitutional Law (Relevant chapters).

Henkin Luis: Rights of man today , London ,Steven 1978.

singh Nagendra: enforcement of Human rights in Peace and war and the future of Humanity, Calcutta , Eastern law House 1986.

Relevant international Instruments.

14BCADSCP26:Lab 1:Statistics Lab using SPSS

Assignment 1:

- Introduction to SPSS package : Basic Usage, UI and Techniques

Assignment 2:

- Determine Mean, median and mode on a given set of data

Assignment 3:

- Construct FD & Tabulation on a given set of data

Assignment 4:

- Determine min, max, range and standard deviation of a given set of data

Assignment 5:

- Open a new data set in SPSS
- Create a nominal variable called cat_dog that has a width of 3 with 0 decimal places. The label should be "Do you like cats or dogs better?". The values should be 1 for cats and 2 for dogs (or vice versa). Do not worry about missing data codes.
- Create a scale variable called neatness that has a width of 8 with 3 decimal places. The label should be "Eric Cartman's Neatness Scale (higher = neater)". There will be no value labels.
- Enter data for the following cases
 - o case 1 prefers cats and has a neatness of 4
 - o case 2 prefers dogs and has a neatness of 3
 - o case 3 prefers dogs and has a neatness of 7
 - o case 4 prefers dogs and has a neatness of 2
 - o case 5 prefers cats and has a neatness of 5
 - o case 6 prefers cats and has a neatness of 1
 - o case 7 prefers cats and has a neatness of 3
 - o case 8 prefers dogs and has a neatness of 6
- Change the neatness of the second case from 3 to 6, like you would if you discovered a data entry error.
- Save your data set

Assignment 6:

- Create a data set in SPSS for the following data:

Group	Gender	Hw1	Hw2	Hw3
expt	Male	92	84	93
expt	Female	77	84	85
expt	Male	87	86	81
expt	Female	89	90	93
expt	Male	64	73	78
control	Female	81	84	93
control	Male	83	90	91
control	Female	84	88	86
control	Male	82	80	78
control	Female	96	91	88

- Using the Frequencies option, find the mean, median, mode, quartiles, 95th percentile, variance, standard deviation, minimum, and maximum of Hw1, Hw2, and Hw3.
- Using the Descriptives option, find the means and standard deviations of Hw1, Hw2, and Hw3.
- Using the Compare Means --Means procedure, find the means on Hw1, Hw2, and Hw3 for everyone, for the experimental group, for the control group, for men, for women, and for all combinations of gender and group.

Assignment 7:

A researcher has created a data table showing the anthropometrical measurements of tribal subjects under each of the four social categories, namely GM, OBC, SC and ST as shown in table.

GM			
Gender	HT	WT	Biceps
1	137.8	30.5	5.50
2	130.2	29.5	5.65
2	135.6	29.0	5.15
2	137.8	30.0	5.25
1	131.5	30.5	4.95
1	132.8	31.5	5.65
1	139.8	30.5	5.50
1	136.7	30.0	5.65
1	138.6	30.5	5.15
1	139.5	30.5	5.25

SC			
Gender	HT	WT	Biceps
2	132.4	25.0	4.37
1	133.5	24.5	4.95
1	130.6	25.5	4.65
1	132.5	26.5	4.45
1	130.6	26.0	6.48
2	132.4	25.5	5.01
1	130.5	25.0	4.37
1	132.4	24.5	4.95
2	133.5	25.5	4.65
2	130.6	26.5	4.45

OBC			
Gender	HT	WT	Biceps
1	124.4	23.5	4.61
2	125.5	23.0	4.52
1	126.3	24.0	4.45
2	128.0	23.5	4.39
1	129.0	25.0	4.37
2	130.0	22.0	4.69
1	129.5	23.5	4.61
1	130.0	23.0	4.52
2	126.0	24.0	4.45
2	128.5	23.5	4.39

ST			
Gender	HT	WT	Biceps
1	124.5	20.5	3.54
1	125.8	21.0	3.55
1	123.5	20.5	3.95
1	124.8	22.0	4.05
1	122.5	21.5	3.55
1	122.8	22.0	3.54
1	122.5	22.5	3.55
1	121.5	21.5	3.95
1	124.5	20.5	4.05
2	125.8	21.0	3.55

- Create a data file in SPSS (The Data in SPSS has to be entered with category 1=GM, 2=OBC, 3=SC and 4=ST. The codes for Gender are 1=Male and 2= Female).
- Generate central tendency and measures of dispersion output using the descriptives command in SPSS for the variables Height, Weight and Biceps.
- Generate two-way cross table Gender versus Category.

Assignment 8:

The marks obtained by 50 students of a class in mathematics are given below.

32, 42, 41, 51, 41, 30, 39, 18, 48, 53, 54, 32, 31, 46, 15, 37, 32, 56, 42, 48, 38, 26, 50, 40, 38, 42, 35, 22, 62, 51, 44, 21, 45, 31, 37, 41, 44, 18, 37, 47, 38, 41, 30, 52, 52, 60, 42, 38, 38, 34.

- Create a data file in SPSS.
- Generate a frequency table.
- Draw the Histogram.
- Generate central tendency output using the frequencies command in SPSS.
- Generate central tendency output using the descriptives command in SPSS.
- Generate central tendency output using the explore command in SPSS.

Assignment 9:

The number of blood donations in the years 1995 and 2000 in various blood groups are as follows

Year:	O	A	B	AB
1995	1154	526	775	155
2000	700	1125	1280	560

- Create a data file in SPSS and hence represent the data by multiple bar diagram.

Assignment 10:

The following data represent the Number of Students by faculty in a college

Year	Humanity	Science	Commerce
1996	2810	890	540
1997	3542	1363	471
1998	4301	1662	652
1999	6593	2752	1113

- Create a data file in SPSS and hence represent the data by subdivided bar plot.

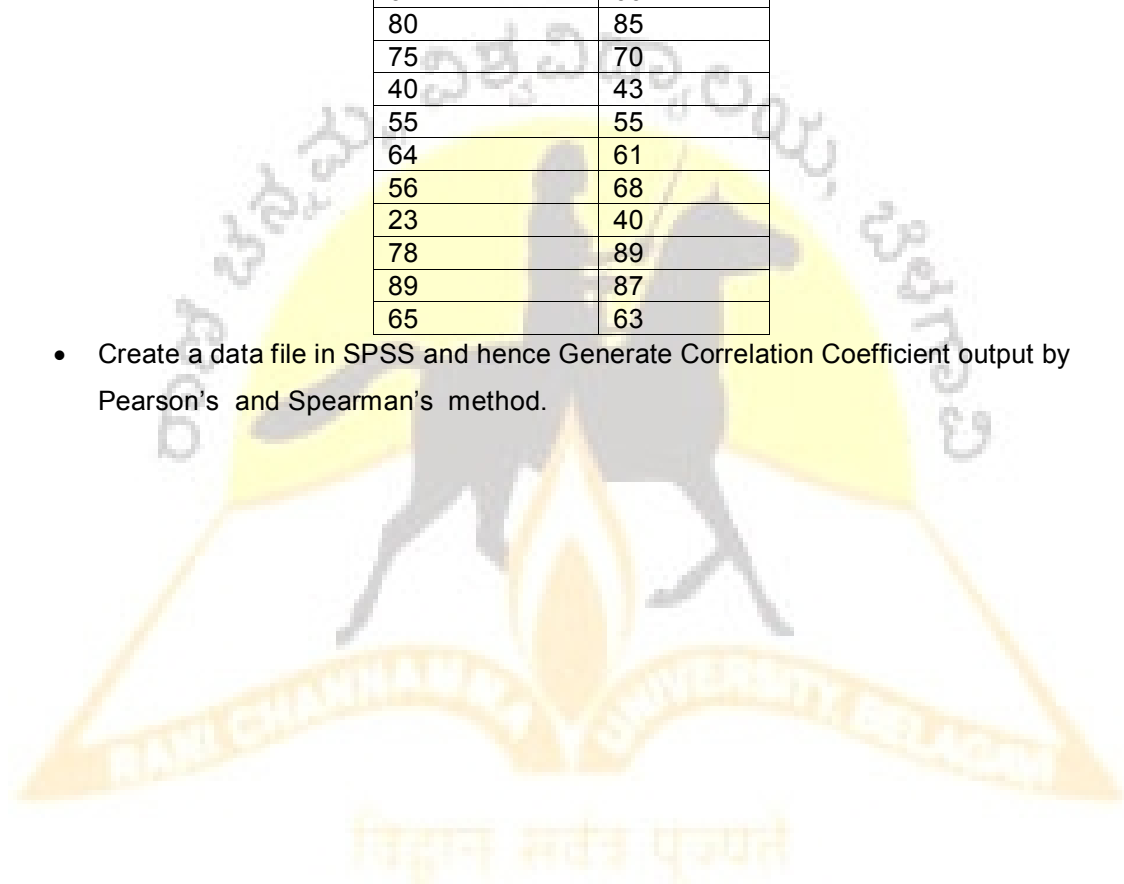


Assignment 11:

Marks obtained by students in Mathematics and Statistics in a class are given below.
pearson's and spearman's method.

Mathematics	Statistics
68	65
54	60
75	72
50	53
64	60
80	85
75	70
40	43
55	55
64	61
56	68
23	40
78	89
89	87
65	63

- Create a data file in SPSS and hence Generate Correlation Coefficient output by Pearson's and Spearman's method.



14BCADSCP27:Lab 2: Data Structures Programming Lab

1. Write a C program to create a structure Employee that stores empno, name, age , salary and include the following tasks:
 - i) Accept details of N employees
 - ii) Display the details of N employees in the following format”

Empno	Name	age	salary
1.			
2.			
3.			
:			
:			

2. Write a C program to demonstrate pointer arithmetic.
3. Write a C program to create file N students, it should contain Rollno, Name, marks in two subjects, Using the above created file, create an output file which contains Rollno, Name, marks in subjects, Total and average.
4. Write a C program to create a character file and count the number of characters, words and blank spaces present in it.
5. Write a C program to demonstrate the working of stack of size N using an array the elements of the stack may be assumed to be of type integer by creating an array, the operations to be supported are 1. PUSH 2. POP 3. DISPLAY. The program to should print the appropriate message for stack is underflow and overflow.
6. Write a C program to convert and print valid fully parenthesized infix arithmetic expression to postfix.
7. Write a C program to simulate the working of a Queue using an array Provide the operations QINSERT, QDELETE and QDISPLAY, check the Queue status for empty and full.
8. Write a C program to simulate the working of a Circular Queue using an array Provide the operations CQINSERT, CQDELETE and CQDISPLAY, check the Circular Queue status for empty and full.
9. Write a C program to demonstrate the working of a Dequeue using array and provide for all its basic operations.
10. Write a C program to find the Binomial Coefficient using recursion.
11. Write a C program to find the nth Fibonacci number by using recursion.

12. Write a C program to simulate the working of towers of Hanoi for N disks, print the total number of moves taken.

13. Using Dynamic variables and pointers write a C program to construct a singly linked list consisting of the following information in each node: Rollno(integer), name (string):

The operations to be supported are:

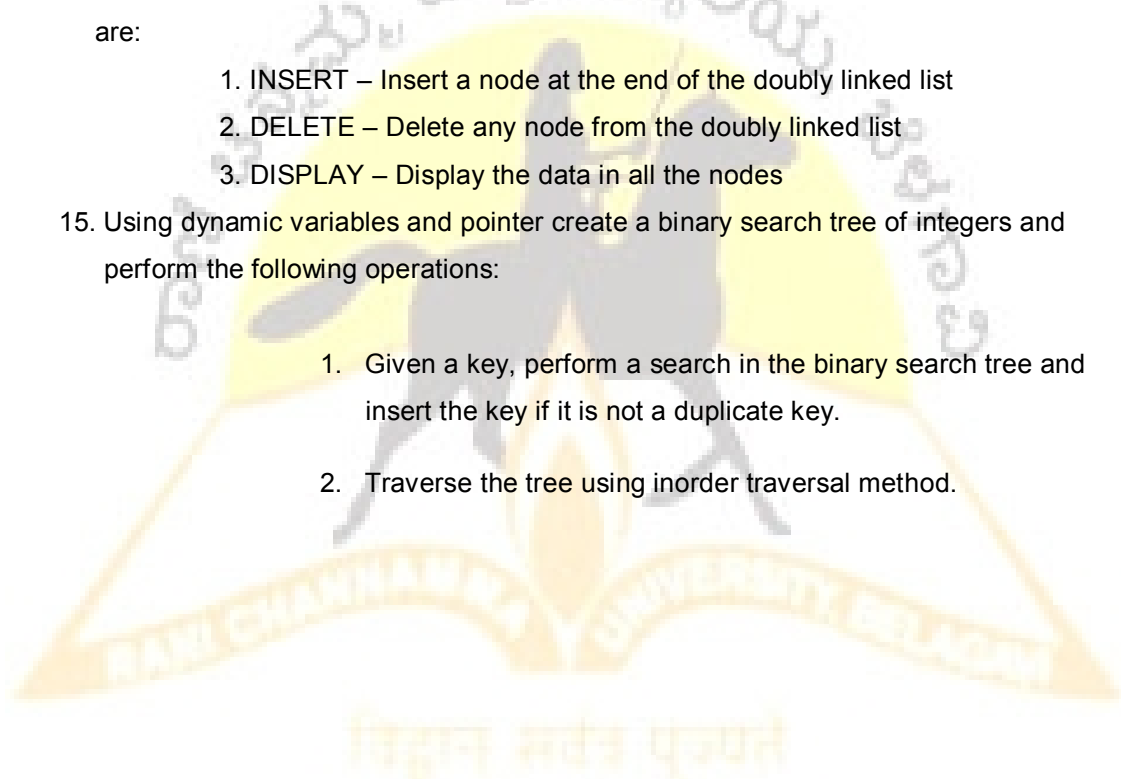
1. LINSERT – Inserting a node in the front of the list(Min 8 nodes)
2. LDELETE – deleting a node based on rollno
3. LSEARCH – searching a node on rollno
4. LDISPLAY –Displaying the data in all the nodes

14. Write a C program to create a doubly linked list where each node consists of the following information: left link, data(integer), right link. The operations to be supported are:

1. INSERT – Insert a node at the end of the doubly linked list
2. DELETE – Delete any node from the doubly linked list
3. DISPLAY – Display the data in all the nodes

15. Using dynamic variables and pointer create a binary search tree of integers and perform the following operations:

1. Given a key, perform a search in the binary search tree and insert the key if it is not a duplicate key.
2. Traverse the tree using inorder traversal method.



Evaluation Criteria

Theory Examination

Pattern of question paper for U. G effective from 2014-15 for BSc 1st and 2nd Semesters

PART A: Q 1 with TWELVE sub Questions numbered as a,b,c,d,e,f,g,h,i,j,k,l each of TWO marks should be set. Student has to answer any TEN questions.

Note:

There should not be any multiple choice questions.

At least TWO questions should be set on each unit.

Total Marks: $2 \times 10 = 20$ marks

PART B : SIX Questions numbered as 2, 3,4,5,6,7 each of FIVE marks should be set. Student has to answer any FOUR questions.

Note:

Of this at least three shall be problem oriented

Total marks: $5 \times 4 = 20$ marks

At least ONE question should set on each unit.

PART C: FIVE Questions numbered as 8, 9,10,11,12, each of TEN marks should be set. Student has to answer any FOUR questions.

At least ONE question should set on each unit.

Total marks: $10 \times 4 = 40$ marks

TOTAL SECTION (A+B+C)=80 Marks

Practical Examination

Evaluation criteria for practical examinations shall be as follows:

1. Writing of Programs -30 Marks
 - a. One program from the journal list – 15 Marks
 - b. Another program given by examiner based on the concepts studied -15 Marks
2. Execution of programs – 35 Marks
 - a. Journal Program -20 Marks
 - b. Program of Examiner's Choice -15 Marks
3. Viva-Voce -10 Marks
4. Journal / Laboratory Report – 5 Marks

Total Marks - 80 Marks

