



# **RANI CHANNAMMA UNIVERSITY, BELAGAVI**

**WEL-COME**

**TO THE COURSE STRUCTRE AND SYLLABUS OF UNDERGRADUATE  
PROGRAMMES – BCA**

**II Semester**

**w.e.f.**

**Academic Year 2017-18 and Onwards**

BCA II Semester (w.e.f. 2017-18 and onwards)							
17BCA1721(A)	Financial Management	4	--	3	80	20	100
17BCA1721(B)	Mathematics -II	4	--	3	80	20	100
17BCAAENT22 17BCAHINT22 17BCAKANT22 17BCAMART22 17BCASANT22	MIL Add. English/ Hindi / Kannada / Marathi / Sanskrit	4	--	3	80	20	100
17BCADSCT23	Data Structures Using C	4	--	3	80	20	100
17BCADLCT24	Digital Logic and Computer Design	4	--	3	80	20	100
17BCAHRET25	Human Rights and Environmental Studies	4	--	3	80	20	100
17BCADSCP26	Programming Lab.- Data Structures using C	--	4	3	80	20	100
17BCADLLP27	Programming Lab.- Digital Logic Lab.	--	4	3	80	20	100

**17BCAFNAT21(A): Financial Management****Teaching Hours: 4 Hrs/week****Marks: Main Exam: 80  
IA: 20****UNIT I****10Hrs**

The Role of Management Accounting, Management Accounting Framework, Functions of Management Accounting, Tools of Management Accounting, The Balanced Scorecard, Cost Management System, Value Added Concept, Merits of Management Accounting, Demerits of Management Accounting, Distinction between Management Accounting and Financial Accounting.

**UNIT II****10Hrs**

Financial Statement Analysis: Meaning of Ratio, Steps in Ratio Analysis, Classification of Ratios, Du Pont Chart, Solved Problems, Advantages of Ratio Analysis, Limitation of Ratio analysis  
Funds Flow Analysis: Meaning of Funds Flow Statement, Ascertainment of flow of funds, Technique of preparing funds flow statement, Schedule of Changes in Working Capital, Adjusted Profit and Loss account, Funds Flow Statement.

**UNIT III****10Hrs**

Cash Flow Analysis: Meaning of Cash Flow Statement, Purpose of Cash Flow Statement, Preparation of Cash Flow Statement, Format of Cash Flow Statement, Cash Flow from Operating Activities, Cash Flow Statement under Direct Method, Different between Cash Flow Analysis and Fund Flow Analysis, Uses of Cash Flow Statement  
Understanding Cost: Meaning of Cost, Objective of Costing, Methods of Costing, Technique of Costing, Classification of Cost, Elements of Cost, Statement of Cost Sheet, Solved Problems.

**UNIT IV****10Hrs**

Marginal Costing and Break Even Analysis: Introduction, Concept of Marginal Costing, Characteristics of Marginal Costing, Difference between Absorption Costing and Marginal Costing, Marginal Cost, Contribution, Cost Volume Profit (CVP) Analysis, Break Even Chart, Break Even Point, Profit Volume ratio or MCSR, Target profit, Margin of Safety, Application of Marginal cost, Limitations of Marginal cost, Solved Problems.

**UNIT V****10Hrs**

Joint Stock Company - Meaning, Definition, Objectives, Issue of Shares (Equity Shares & Preference shares), Preparation of final Accounts, Trading account, profit and loss account, profit & loss appropriation account & balance sheet.  
Decisions Involving Alternative Choices: Decision Making, Types of Costs, Types of Choices Decisions, Make or Buy Decisions, Addition/Discontinuance of a Product line, Sell or Process Further, Operate or Shut down, Exploring New Markets, Maintaining a desired level of profit.

**References:**

1. I. M. Pandey, Financial Management, 9<sup>th</sup> Edition, Vikas Publishing.
2. Khanna and Jain, Financial Management, 5<sup>th</sup> edition, Tata McGrawHill

3. R K Sharma, Sashi K Gupta, Management Principles Accounting and Practices, Kalyani Publishers.
4. Maheshwari S.N., Principles of Management Accounting, 11th Edition, Sultan Chand & Sons.

**Additional Reading:**

5. James C., Van Horne, Financial Management and Policy, Prentice Hall.
6. Dr. S P Gupta, Management Accounting

<b>17BCAMAT21(B): Mathematics-II</b>	
<b>Teaching Hours: 4 Hrs/week</b>	<b>Marks: Main Exam: 80 IA: 20</b>

UNIT I 10Hrs  
 Infinite Series: Convergence and divergence of infinite series, Comparison Test, D'Alembert's Ratio Test, Gauss Test, Raabe's test, Logarithmic Test, Cauchy's Root Test, Alternating series, Conditional convergence & absolute convergence.

UNIT II 10Hrs  
 Determinants: Definition, Minors, Cofactors, Properties of Determinants.  
 Matrices: Definition, Types of Matrices, Addition, Subtraction, Scalar Multiplication and Multiplication of Matrices, Adjoint, Inverse, Cramers Rule, Rank of Matrix, Dependence of Vectors, Eigen Vectors of a Matrix, Caley-Hamilton Theorem (without proof).

UNIT III 10Hrs  
 Limits & Continuity: Limit at a Point, Properties of Limit, Computation of Limits of Various Types of Functions, Continuity at a Point, Continuity Over an Interval, Intermediate Value Theorem, Type of Discontinuities

UNIT IV 10Hrs  
 Differentiation: Derivative, Derivatives of Sum, Differences, Product & Quotients, Chain Rule, Derivatives of Composite Functions, Logarithmic Differentiation, Rolle's Theorem, Mean Value Theorem, Expansion of Functions (Maclaurin's & Taylor's), Indeterminate Forms, L'Hopital's Rule, Maxima & Minima, Curve Tracing, Successive Differentiation & Leibnitz Theorem.

UNIT V 10Hrs  
 Integration: Integral as Limit of Sum, Fundamental Theorem of Calculus (without proof.), Indefinite Integrals, Methods of Integration Substitution, By Parts, Partial Fractions, Reduction Formulae for Trigonometric Functions, Gamma and Beta Functions (definition).

**References:**

1. John Bird, Higher Engineering Mathematics, Elsevier
2. B.S. Grewal, Elementary Engineering Mathematics, Khanna Publishers.
3. Shanti Narayan, Integral Calculus, S. Chand & Company.
4. Shanti Narayan and P K Mittal, Text book of Matrices, 5th edition S Chand and Co..
5. Shanti Narayan, Differential Calculus, S. Chand & Company.

**Additional Reading:**

6. D.C. Sancheti, Business Mathematics, Eleventh Edition, Sultan Chand & Sons
7. K. Ganesan, Sundaramma Kesavan, K.S. Ganapathy Subramanian & V. Srinivasan, Engineering Mathematics, Gamma publications.

**GROUP -1 (LANGUAGES)**  
**Detailed Syllabus for B. Sc. / B.Sc. Comp-Sc / BCA / B. Sc. in CCJ**  
**(With effect from 2016-17 onwards)**  
**Semester II: Basic English**  
**Teaching Hours: 5 per Week**

**I Text: Prose**

- 1) A Chameleon – Anton Chekhov
- 2) The False Gems – Guy de Maupassant
- 3) The Secret of Work – Swami Vivekanand
- 4) Duty – Mulk Raj Anand
- 5) Our Home in Space – Sir James Jeans

**Poetry**

- 1) Hunger – Jayant Mahapatra
- 2) Telephone Conversation – Wole Soyanka
- 3) The Diameter of the Bomb – Yehuda Amichai
- 4) This is a Photograph of Me – Margret Atwood
- 5) The Emperor of Ice Cream – Wallace Stevens

**II Grammar and Communication Skills**

- A) Synonyms and Antonyms text based
- B) Frame Wh- questions
- C) Communicative Skills
  - a) Short Speech Skills - Global Warming, Water Scarcity, Pollution, Terrorism, Anti-social activities, Startups, Plantation, bio-diversity, rain harvesting, women education, Clean Mission India, Impact of strikes, Alcoholism, First day in college, Mother's day, Yoga day, Environment day and Science day. (about 100-150 words)
  - b) Preparing an Advertisement - Notebook, Pen, Soap, Smart Phone, TV, Computer, Shoes, etc.
  - c) Resume and CV writing

**Pattern of Question Paper**  
(80arks paper of three hours and 20 Marks for I.A)

1) Objective type questions (from Prose and 5 from Poetry)	10X1=10
Reference to Context (One from Prose and one from Poetry out of four)	2X5=10
3) Essay type question on Prose (one out of two)	1X10=10
4) Essay type question on Poetry (one out of two)	1X10=10
5) Short Notes (One from Prose and One from Poetry out of four)	2X5=10
Synonyms	5X1=05
B) Antonyms	5X1=05
B) Framing Wh- questions	5X1=05
7) A) Short Speeches	1X5=05
B) Preparing an Advertisement	1X5=05
C) Resume Writing/CV	1X5=05

**80**

**Detailed Syllabus for B. Sc. / B.Sc. Comp-Sc / BCA / B. Sc. in CCJ**  
(With effect from 2016-17 onwards)  
**Semester II: Additional English**  
**Teaching Hours: 5 per Week**

**Text: The Cutting Edge: Science & Scientists**

(Ed. Colin Swatridge (Macmillan)

Only the following biographical sketches are to be taught.

1. Rene Descartes (1596-1650)
2. Antoine Lavoisier (1743-94)
3. Ivan Pavlov (1849-1926)
4. Sigmund Freud (1856-1939)
5. Werner Heisenberg (1901-1976)

## **Grammar and Composition**

- 1) Relative Clauses
- 2) Conditionals and 'wish'
- 3) Use of words as Two different forms of Speech
- 4) Report Writing (functions, seminars, excursion, tours, accident, earthquake, flood, etc.)

### **Pattern of Question Paper**

(80 Marks per paper of three hours and 20 Marks for I.A)

1) Objective type questions	10X1= 10
2) Comprehension Questions on the biographical sketches	5X2=10
3) Essay type question on the biographical sketches (One out of two)	1X10 =10
4) Essay type question on the biographical sketches (One out of two)	1X10=10
5) Short Notes on the biographical sketches (Two out of four)	2X5=10
6 ) A) Relative Clauses	5X1=05
B) Conditionals and 'wish'	5X1=05
7) Use of words in a sentence as two different forms of Speech	5X2 = 10
8) Report writing	10
	<b>80</b>



## Syllabus of B. Sc/BCA II Semester

### Hindi Basic 2016-17 onwards

Teaching hours per week:	05 hours	Total Marks:	100 Marks
Examination:	03 hours	Theory:	80 Marks
		Internal Assessment:	20 Marks

#### Text Books:

1. काव्य सरगम- सं. संतोष कुमार चतुर्वेदी, लोकभारती प्रकाशन, इलाहाबाद-१  
(अध्ययन के लिए मैथिलीशरण गुप्त से अशोक वाजपेयी तक की कविताएँ)
2. सामान्य निबंध
3. अनुवाद

#### Distribution of Marks

काव्य सरगम	- 55 अंक
सामान्य निबंध	- 15 अंक
अनुवाद	- 10 अंक

A	Objective Type Questions (10 out of 14)	10 Marks
B	Annotations from Text Book (3out of 5)	15 Marks
C	Essay Type of Questions from Text Book (2 out of 4)	20 Marks
D	Short Notes from Text Book (2out of 4)	10 Marks
E	General Essay (सामान्य निबंध) (1out of 3)	15 Marks
F	Translation (अनुवाद) (Kannada/English in to Hindi)	10 Marks
	Theory total	80 Marks
	Internal Assessment	20 Marks
	Total	100 Marks

#### Reference Books:

१. छायावाद- डॉ. नामवर सिंह
२. प्रगतिवाद- डॉ. शिवकुमार मिश्र
३. अज्ञेय और प्रयोगवाद- शैल सिन्हा
४. प्रेमचंद के श्रेष्ठ निबंध- डॉ. सत्यप्रकाश मिश्र
५. अनुवाद विज्ञान- डॉ. भोलानाथ तिवारी
६. अनुवाद कला- डॉ. विश्वनाथ अय्यर
७. निबंधों का खजाना- आरती अग्निहोत्री
८. श्रेष्ठ हिंदी निबंध- ब्रज किशोर प्रसाद सिंह

## ಸಾಹಿತ್ಯ ಸಿಂಚನ-೨

ಬಿ.ಸಿ.ಎ., ಬಿ.ಬಿ.ಎ.,ಬಿ.ಎಸ್.ಸಿ. (ಕಂಪ್ಯೂಟರ್ ಸೈನ್ಸ್) ಎರಡನೆಯ ಸೆಮಿಸ್ಟರ್

### ಅನುಬಂಧ - ೪

#### ಪದ್ಯಭಾಗ

೧.	ಸತಿ ಪತಿ	-ಜನಪದ
೨.	ಮಯೂರಧ್ವಜನ ಉವಾಚ	-ಲಕ್ಷ್ಮೀಶ
೩.	ಮೋಳಿಗೆ ಮಾರಯ್ಯ	-ಭೀಮಕವಿ
೪.	ಆಹಾ! ನೀರೆ!	-ಡಾ. ವಿ. ಕೃ. ಗೋಕಾಕ
೫.	ಮಾಯಾಕಿನ್ನರಿ	-ದ.ರಾ. ಬೇಂದ್ರೆ
೬.	ಯಾವ ಹಾಡ ಹಾಡಲಿ?	-ಜಿ. ಎಸ್. ಶಿವರುದ್ರಪ್ಪ
೭.	ನಾನೊಂದು ಮರವಾಗಿದ್ದರೆ	-ಮುಡ್ನಾಕೂಡು ಚೆನ್ನಸ್ವಾಮಿ
೮.	ಅವ್ವ	-ವಿಕ್ರಮ ವಿಸಾಜಿ
೯.	ಕನ್ನಡ ಮೆರೆಯಲಿ	-ಬಿ. ಎಂ. ಇದಿನಬ್ಬ

#### ಗದ್ಯಭಾಗ

೧೦.	ಸಾಹಿತ್ಯ-ನನ್ನ ದೃಷ್ಟಿಯಲ್ಲಿ	-ಹಾಮಾನಾ
೧೧.	ಪ್ರೀತಿಯ ಮೀಮಾಂಸೆ	-ಪ್ರೊ. ವೀರೇಂದ್ರ ಸಿಂಪಿ
೧೨.	ಭೂ ತಾಪಮಾನ: ಕಾರಣಗಳು ಮತ್ತು ಪರಿಹಾರೋಪಾಯಗಳು	-ಡಾ. ವಿ. ಎನ್. ನಾಯಕ
೧೩.	ಬೀಜ...ಮೊಳಕೆ...ಆಹ್ವಾನ	-ಮೂಲ: ವಿಠಲ ವೆಂಕಟೇಶ ಕಾಮತ -ಕನ್ನಡಕ್ಕೆ : ಅಕ್ಷತಾ ದೇಶಪಾಂಡೆ
೧೪.	ಪರಿಸರ ನಿರ್ವಹಣೆ ಮತ್ತು ಮಹಿಳೆ	-ಸತ್ಯಾ ಎಸ್.
೧೫.	ಒಂದು ಹೆಣದ ಸುತ್ತ	-ವೀರಭದ್ರ ಕೌದಿ

**Syllabus prescribed for B.Sc is applicable to B.C.A and B.Sc C.S.**

**B.Sc  
Semester II  
Basic Marathi**

**Course: Literary Form: Translation : The Kalam**

**Efect : P. M. Nayar**

**Translation : Meera Shete-Shambu**

**Vishwakarma Publications, Pune.**

**B. Com / BBA / BCA : Second Semester  
Basic Samskrit**

**Examination Marks One paper carrying 100 Marks (80+20) of 3 hours duration**

**Text :**

Pacheen Bharatiya Vanijjaya Vignana

Bharat Book Depot & Prakashan, Shankar Plaza, P. B. Road,  
Dharwad.

I. Division of Marks for the Basic Paper	70 Marks
a. Pracheen Bharatiya Vanijjaya Vijnana	10 Marks
b. Grammer (Use of Cases) (Neuter Gender only)	
c. Internal Assessment	20 Marks
i. Internal Test – 14	
ii. Assignment, Class record, Skill development – 06	
<b>Total</b>	<b>100 Marks</b>

---

**B. Com / BBA / BCA**

---

---

## Second Semester Basic Samskrit

---

---

### (Pattern of the Question Paper)

I	Objective type questions from text (only ten)	10 Marks
II	Translation and explanation of the verses from the text (Any two out of three)	10 Marks
III	Sentences for Annotation from the text (Any four out of seven)	16 Marks
IV	Short notes — from the text	
	a. Any one out of two (with internal choice) Lessons 1-7 based on Vanijya Vijnana	5 Marks
	b. Any one out of two (with internal choice)	5 Marks
	c. from the 8th lesson — Dootaghatothkacham	
V	Essay type question from the text	12 Marks
	a. Any one out of two (with internal choice) from the lessons 1-7 based on Vanijya Vijnana	12 Marks
	b. Any one out of two (with internal choice) From the 8th lesson - Dootaghatothkacham	10 Marks
VI	Grammar (Neuter Gender noun Pronoun case forms)	10 Marks
<b>Total</b>		<b>80 Marks</b>

## 17BCADLCT23:Data Structures Using C

Teaching Hours: 4 Hrs/week

Marks: Main Exam: 80

IA: 20

### UNIT I

10Hrs

Advanced C: Dynamic memory allocation and pointers in C- Declaring and initializing pointers, Pointer & Functions, Pointer & Arrays, Pointer & Strings, Pointer& Structure, Pointer to Pointer. Static and dynamic memory allocation. Memory allocation functions :malloc, calloc, free and realloc.

File Management in C: Defining and Opening & Closing File, Input & Output Operations on Files, Random Access to Files,

### UNIT II

10Hrs

Introduction to Data structures: Definition, Classification of data structures: primitive and non-primitive. Operations on data structures

Search: Basic Search Techniques- sequential search, Binary search- Iterative and Recursive methods.

Sort- General Background: Definition, different types: Bubble sort, Selection sort, Merge sort, Insertion sort, Quick sort

### UNIT III

10Hrs

Recursion: Definition, Recursion in C, Writing Recursive programs – Binomial coefficient, Fibonacci, GCD, towers of Hanoi.

Stack – Definition, Array representation of stack, Operations on stack-push and pop, Infix, prefix and postfix notations, Conversion of an arithmetic expression from Infix to postfix, applications of stacks.

### UNIT IV

10Hrs

Queue - Definition, Array representation of queue, Types of queue: Simple queue, circular queue, double ended queue (deque) priority queue, operations on all types of Queues.

### UNIT V

10Hrs

Linked list – Definition, components of linked list, representation of linked list, advantages and disadvantages of linked list, Arrays versus linked list, Types of linked list: Singly linked list, doubly linked list, Circular linked list and circular doubly linked list. Operations on singly linked list: creation, insertion, deletion, search and display. Implementation of stack and queues using linked list.

### References

1. A. K. Sharma, Data Structures Using C, 2nd edition, Pearson Education.
2. Achuthsankar S. Nair, T. Makhalekshmi, Data Structures in C, PHI.
3. Mark Allen Weiss, Data Structures and Algorithm Analysis in C, Pearson Education.
4. Samanta. D., Classic Data Structures, Prentice Hall

### Additional Reading

5. Richard F. Gilberg, Behrouz A. Forouzan, Data structures-A Pseudocode Approach with C, Thomson Learning.
6. A. M. Tenenbaum, Y, Langsam, M. J. Augustein, R. L. Kruse, B. P. Leung and C. L. Tondo, Data Structures using C, PHI.
7. Trembley, An introduction to Data Structures with applications, Tata McGraw Hill.
8. C. Loudon, Mastering Algorithms, SPD/O'REILL

## 17BCADLCT24: Digital Logic and Computer Design

Teaching Hours: 4 Hrs/week

Marks: Main Exam: 80

IA: 20

UNIT I 10Hrs  
Digital Systems and Binary Numbers: Digital Systems, Number systems and base conversions, Representation of signed Binary Numbers, Binary codes, binary logic.

UNIT II 10Hrs Boolean Algebra:  
Introduction to Boolean Algebra, Axioms and Laws of Boolean Algebra, Boolean functions, Canonical and Standard Forms.  
Gate – Level Minimization: The Map method, Two, Three, Four Variable K-map's, Don't Care Conditions, NAND and NOR implementation, Exclusive OR function.

UNIT III 10Hrs  
Combinational Logic: Combinational logic circuits, analysis and design procedure, Binary adder and subtractor, decimal adder, binary multiplier, Magnitude comparator, Decoders, Encoders, Multiplexers.

UNIT IV 10Hrs  
Synchronous Sequential Logic: Sequential circuits, Latches, Flip Flops, SR, JK, T, D Flip Flops, Flip Flop excitation tables.  
Registers and Counters: Registers, Shift registers, Ripple counters, Synchronous counters, Other counters.

UNIT V 10Hrs  
Memory and Programmable Logic: Random access memory, memory decoding, error detection and correction, Read-Only memory, Programmable logic array, Programmable array logic, sequential programmable devices.

### References:

1. M. M. Moris and Michael D. Ciletti, Digital Design, 5<sup>th</sup> Edition, Pearson.
2. M. Moris Mano, Digital Logic and Computer Design, 4th Edition, Pearson.
3. V. Rajaraman, T. Radhakrishnan, An Introduction to Digital Computer Design, Prentice Hall.
4. Paul Malvino, Digital Principles and Applications by Leach, 57th Edition, Tata McGrawHill.

### Additional Reading:

5. Charles H. Roth, Fundamentals of Digital Logic Design, 5th Edition, Cengage
6. G.K. Kharate, Digital Electronics, Oxford University Press
7. A. Anand Kumar, Switching Theory and Logic Design, 2nd Edition, PHI.

<b>17BCADSCP26: Programming Lab- Data Structures using C</b> <b>Practical Hours: 4 Hrs/week</b>	<b>Marks: Main Exam: 80</b> <b>IA: 20</b>
--	--

1. Write a C program to demonstrate the Dynamic Memory Allocation for Structure by reading and printing n student details.
2. Write a C program to read a one dimensional array, print sum of all elements along with inputted array elements using Dynamic Memory Allocation.
3. Write a C program to add two matrices using pointer to an array concept.
4. Write a program to sort array of integers using array of pointers concept.
5. Write a function that accepts pointer to an array and sorts array of integers.
6. Write a program that takes a file as an argument and counts the total number of lines. Lines are defined as ending with a newline character. Program usage should be count filename.txt and the output should be the line count.
7. Write a C program to read a text file and convert the file contents in capital (upper-case) and write the contents in an output file.
8. Write a C program to find n Fibonacci numbers using recursion.
9. Write a C program to find factorial of any number using recursion.
10. Write a C program to search for an element in an array using Sequential search
11. Write a C program to search for an element in an array using Binary search
12. Write a C program to sort a list of N elements using Bubble sort Technique
13. Write a C program to sort a list of N elements using Merge sort Technique
14. Write a C program to sort a list of N elements using Quick sort Technique
15. Write a C program to sort a list of N elements using Insertion sort Technique
16. Write a C program to demonstrate the working of stack of size N using an array. The elements of the stack may assume to be of type integer or real, the operations to be supported are 1. PUSH 2. POP 3. DISPLAY. The program should print appropriate messages for STACK overflow, Under flow and empty, use separate functions to detect these cases
17. Write a C program to convert a given infix expression into its postfix Equivalent, Implement the stack using an array.
18. Write a C program to simulate the working of an ordinary Queue using an array. Provide the operations QINSERT, QDELETE and QDISPLAY. Check the Queue status for empty and full.
19. Using dynamic variables and pointers Write a C program to construct a singly linked list consisting of the following information in each node; Roll – No (Integer), Name (Character string). The operations to be supported are :
  1. LINSERT Inserting a node in the front of the list
  2. LDELETE Deleting the node based on Roll – No
  3. LSEARCH Searching a node based on Roll-No
  4. LDISPLAY displaying all the nodes in the list
20. Write a C program to implement stack using linked list.

<b>17BCADLLP27: Programming Lab- Digital Logic</b>	
<b>Practical Hours: 4 Hrs/week</b>	<b>Marks: Main exam: 80</b>
	<b>IA: 20</b>

1. For the following functions, construct a truth table and draw a circuit diagram.
    1.  $y(A,B) = (AB)' + B'$
    2.  $y(A,B,C) = (A + B)' C$
    3.  $y(A,B,C) = (AC)' + BC$
    4.  $y(A,B,C) = (A \oplus B)C'$
    5.  $y(A,B) = A' + B$
    6.  $y(A,B,C) = ((A+B)'(B+C))'$
  2. Study and verify the truth table of various logic gates
    - NOT, AND, OR, NAND, NOR, EX-OR, and EX-NOR
  3. Simplify Boolean expressions and realize it.
  4. Verification of Boolean Theorems using basic gates.
  5. Design a 4-input NAND gate using two 2-input NAND gates and one 2-input NOR gate. Hint: Use DeMorgan's law
  6. Construct the K-map for each of the following functions
    - (a)  $f(A,B,C) = AB + A'BC' + AB'C$
    - (b)  $g(A,B,C) = A'C + ABC + AB'$
    - (c)  $h(A,B,C,D) = A'BC' + (A \oplus B)C + A'B'CD' + ABC$
  7. For  $g(A,B,C) = A'C + ABC + AB'$ , design the circuit for the minimal SOP expression found in problem 4 using just NAND gates and inverters. Label the pinouts on the circuit diagram. Build the circuit and demonstrate the working circuit.
  8. For the functions listed below, construct a K-map and determine the minimal SOP expression.
    - a.  $f(a,b,c) = a'b'c' + a'bc' + abc' + abc$
    - b.  $g(a,b,c) = ab'c' + abc' + abc + \text{don't cares}(a'bc + ab'c)$
 Build the circuit required for (b).
  9. Design and verify a half/full adder
  10. Design and verify half/full subtractor
  11. Design a 4 bit magnitude comparator using combinational circuits.
  12. Design and verify the operation of flip-flops using logic gates.
  13. A two bit counter is to be built that will count forward,  $00 \rightarrow 01 \rightarrow 10 \rightarrow 11 \rightarrow 00$ , when a logical input is set high and counts in reverse order when it is low.
    - (a) Draw the state transition diagram for this state machine.
    - (b) Assuming a state machine were to be built using D flip-flops, determine the value of the next state for each of the flip-flops.
 Build and demonstrate the state machines
  14. Verify the operation of a counter.
  15. Verify the operation of a 4 bit shift register
- **Any open source simulator like Logisim <https://sourceforge.net/projects/circuit/> can be used.**
  - **Breadboards/trainer kit may be used to realize logic gates**

Additional resource Verilog Online simulator: [www.iverilog.com/](http://www.iverilog.com/) may be used to model digital circuits and systems.



## Theory Paper Evaluation Scheme

### (i) Internal Test– 20 Marks:

Test: 14 marks

Attendance: 03 marks

Seminar/assignment: 03 marks

Two tests shall be conducted, one during the mid of the semester and another at the end of the semester for 1 hour 15 mnts duration each.

First IA Marks: 20 weightage: 06

Second IA Marks: 20 weightage: 08

Teachers are encouraged to conduct the test either using any open source learning management system such as Moodle (Modular object-oriented dynamic learning environment) Or a test based on an equivalent online course on the contents of the concerned course(subject) offered by or build using MOOC (Massive Open Online Course) platform.

**Note: Guidelines given by the University from time-to-time shall be followed for IA.**

### (ii) Examination-

Max Marks: 80

Duration - 3 Hours.

Theory question paper pattern:-		Remarks
Questions	Marks	
SECTION A Q1. Answer all the questions 10 sub questions (a-j)	2 x 10 =20	ability to write short answers upto 150 words
SECTION B Q2. through Q6: Answer any four questions	4 x 5=20	ability to write answers upto 500 word
SECTION C Q7. through Q11: Answer any four questions	4 x 10=40	ability to write descriptive answers

**Note:** For Section-B, one question from each unit shall be considered. For Section-C, one question from each unit shall be considered.

## **Programming Lab. i.e. Practical Evaluation Scheme**

### **(i) Internal Test– 20 Marks:**

Test: 14 marks

Attendance: 03 marks

Seminar/assignment: 03 marks

Two tests shall be conducted, each of 14 marks, and average of the two shall be considered as final.

Duration of IA test: 1 hr.

Students shall design and implement the programs/assignments given from the set of assignments provided at the beginning of the course commencement.

Course teacher are encouraged to test the students by giving the students problems from the course topic other than the set of assignments given to strengthen student's ability in problem solving

***Note: Guidelines given by the University from time-to-time shall be followed for IA.***

### **ii) Practical Examination- 80 Marks    Duration - 3 Hours.**

Certified Journal is compulsory for appearing Practical Examination

Students shall be given two programming assignments taking into consideration of duration of the time allotted to students for writing, typing and executing the programs.

Algorithm/program design	: 30
Execution execution results)	: 30 (includes program code correctness and correct
Journal	: 10
Viva-Voce	: 10

Name of the subject: **Environmental studies and Human rights**

Contact Hours : 52

Contact Hours per Week : 04

Total marks for examination : 80

Internal Assessments : 20

**B.A./B.Sc./BCA/BSW-II Semester**

**Compulsory subject**

**With effect from the Academic Year 2018-19 onwards**

**Teaching Hours: 04 Hours per Week**

**Total Hours: 52**

**UNIT-I**

**10 Hours**

**1) The Multidisciplinary Nature of Environmental Studies**

Definition, scope and importance

Need for public awareness.

**2) Natural Resources**

Renewable and Non-renewable Resources:

Natural resources and associated problems-Forest resources: r resources, Mineral resources, Food resources, Energy resources.

**3) Ecosystems: Concept**-Concept of an ecosystem, Structure and function of an ecosystem, Producers, consumers and decomposers, Energy flow in the ecosystem.

**4)Ecosystems:** Introduction, types, characteristic features, structure and function.

**UNIT-II**

**10 Hours**

**1) Biodiversity and Its Conservation**

Introduction, definition: genetic, species and ecosystem diversity.

**2) Biodiversity at global, National and local levels**-Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts, Conservation of biodiversity.

Environmental Pollution: Definition, Causes, effects and control measures.

**3) Waste Management**-Solid waste management: Causes, effects and control measures of urban and industrial wastes.

**4) Social Issues and the Environment**-Urban problems related to energy, Water conservation, rain water harvesting, watershed management, Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.

**UNIT-III**

**12 Hours**

**1) Human Population and the Environment**-Population growth, variation among nations, Population explosion – Family Welfare Programme.

**2) Field Work**

a) Visit to a local area to document environmental assets – river/forest/grassland/hill/mountain.

b) Study of common plants, insects, birds.

c) Study of simple ecosystems – pond, river, hill slopes, etc.

(Field work equal to 2 lecture hours)

### **Concept and Development of Human Rights**

- 3) Meaning Scope and Development of Human Rights
- 4) Universal Declaration of Human Rights. UDHR 1948, International Covenant on Civil and Political rights. ICCPR 1996 & International Covenant on Economic social and Cultural Rights.(ICESCR) 1966.

### **Unit -IV Human Rights in India**

**10 Hours**

- 1) Protection of Human Rights Act, 1993
- 2) Third Generation Human Rights (Group Rights) and Fourth Generation Human Rights. (Right to Development and Environmental Rights.)
- 3) Convention on the Elimination of All forms of Discrimination against Women.
- 4) Convention on the Rights of the Child

### **Unit- V Enforcement of Human Rights**

**10 Hours**

- 1) National Human Rights Commission,
- 2) State Human Rights Commission.
- 3) Judicial Activism and Human Rights.
- 4) Human Rights Courts in India.

### **References for Environmental Studies**

01. A.K. De, Environmental Chemistry, Wiley International.
02. B.K. Sharma, Environmental Chemistry, Goel Publishing house.
03. E.D. Wagner, Environmental Management, Saunders Co., USA.
04. T.G. Miller, Environmental Science, Wordsworth publishing Co.

### **References for Human Rights**

1. K.P. Saksena "Human Rights" 1996 New Delhi.
2. Dr. S. Mangalmurthya "Human Rights " Chetan Book House Mysore 2004.
3. Krishnamurthy S. "Human Rights and Police Administration" B. R. Publishing Corporation, Bangalore.
4. B.P. Singh "Human Rights in India" Deep & Deep Publication New Delhi.
5. D.D. Basu, "Human Rights in Constitutional Law" prentice hall.
6. S.O. Agarwal, "Human Rights" Central law Agency, Allahabad.
7. V.A. Anand "Human Rights" Allahabad Law Agency, Faridabad.

### **Scheme of Examination**

<b>Semester</b>	<b>Title of the paper</b>	<b>Theory Hours/ week</b>	<b>Theory Marks</b>	<b>I.A. Marks</b>	<b>Exam Hours</b>	<b>Total Marks</b>
II Semester	Environmental Studies and Human Rights(EVS & HRS)	04	80	20	1.5 Hours	100

Note: The final examination is on Multiple Choice Questions(MCQ) Based. Each unit shall carry equal weightage during the preparation of the question paper.