PARVATHANENI BRAHMAYYA
SIDDHARTHA COLLEGE OF ARTS & SCIENCE
Autonomous
Siddhartha Nagar, Vijayawada–520010
Re-accredited at 'A+' by the NAAC

23CSVAL101: Problem Solving Techniques

Offered to Programmes: B. Sc Honorus (Electronics),

Course Type: Value –Add Course

Course Description: This course focuses on familiarising students in logic development and writing algorithms. It also focuses on making students familiar with Raptor tool for interpreting flowchart.

Course Objects:

1. To learn about basic problem solving techniques
2. To solve given logical problems using algorithms and flowcharts.

Course Outcomes: At the end of the course, students will be able to:

CO1: To learn designing of algorithms and flow charts. (PO5, PO6, PO7)

CO2: To learn basics of logic development. (PO5, PO6, PO7)

SYLLABUS		
UNIT	**TOPICS**	**Lecture Hrs.**
I	Steps Involved in Computer Programming –Problem Definition – Outlining The Solution –Flow Chart – Developing Algorithms – Efficiency of Algorithms - Analysis of Algorithms. Exchanging the Values –Counting – Summation of Set of Number - Factorial Computation.	5
II	Fibonacci Sequence – Reversing the Digits of an Integer, Finding the Square Root of a Number –Smallest Divisor of an Integer – GCD of Two Integers –Generating Prime Numbers –Computing the Prime Factors of an Integer – Raising a Number to a Large Power –Computing the Nth Fibonacci Number.	5
III	Array Order Reversal – Array Counting, Finding the Maximum and Minimum Number in a Set, binary search – Linear Search. Raptor (Flowchart Interpreter): Introduction to Raptor, Description of Raptor, Advantages of Raptor, Drawing flow charts using Raptor.	5

TEXTBOOK

Dromey R G, "How to Solve it by Computer", Prentice Hall of India, 1997

Course has focus on: Skill Development

Websites: https://raptor.martincarlisle.com/

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MODEL PAPER

23CSVAL101: Problem Solving Techniques

Offered to B. Sc. Hons (Electronics)

Max: 35 Marks **Time: 120 Min**

Section-A

Answer any **THREE** from the following 3 x 5 = 15 Marks

1. Develop an algorithm to swap two numbers without using third variable. (CO1, L6)
2. Develop an algorithm to print factorial of given number. (CO1, L6)
3. Develop an algorithm to print prime factors of an integer. (CO2, L6)
4. Develop an algorithm to calculate square root of given number. (CO2, L6)
5. Develop an algorithm to count number of unique elements in given array. (CO3, L6)

Section-B

Answer any **TWO** from the following 2 x10 = 20Marks

6. Discuss steps involved in computer programming. (CO1, L1)
7. Develop an algorithm for
   a) Reversing the digits of an integer - 5M
   b) Computing Nth Fibonacci number. – 5M (CO2, L6)
8. Demonstrate binary search using following data set and keys.: (CO3, L6)
   A=[10,15,25,35,65,70,80]
   Case 1: Key - 10; Case 2: Key - 35 Case 3: Key - 85

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