SYNERGY INSTITUTE OF ENGINEERING AND TECHNOLOGY, DHENKANAL
Near NH-55, Banamali Prasad – 759001

Assignment-I[CO1]

Full Marks-40 **Duration-Within 1 Week from Notification**

Name- **Registration No-**

Subject with Code: Design And Analysis of Algorithms (CSPC2006)
Year & Semester: 2nd & 4th

Course & Branch: B. Tech & CSE

Course Outcome	Total Marks	Marks Secured	Signature of Evaluator
CO1	40		

Section-A
Answer All Questions

1. What are Time Complexity and Space Complexity of an algorithm? [2 marks][L2]
2. How Substitution method works for solving recurrence? [2 marks][L2]
3. What are the conditions for which Master Method is not applicable? [2 marks][L2]
4. What is recurrence? What are the methods to solve a recurrence? [2 marks][L2]

Section-B
Answer All Questions

1. Write a recursive and non-recursive algorithm for Binary Search and explain why it is more efficient than Linear Search. [6 marks][L2]
2. Solve the following recurrence using Recursion Tree Method. [6 marks][L3]
   a) $T(n)= 2T(n/2)+1$
   b) $T(n)=3T(n/4)+cn^2$

Section-C
Answer All Questions

1. Explain various Asymptotic Notations that describes the running time of an algorithm. . [10 marks][L2]
2. Explain Master's Method and solve the following recurrence using Master Method. [10 marks][L3]
   a) $T(n)=2T(n/4)+\sqrt{n}$
   b) $T(n)=2T(n/2)+n^3$