G 355 (Pages : 2) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2014

Sixth Semester

Branch : Computer Science and Engineering / Information Technology

CS 010 601/IT 010 605 – DESIGN AND ANALYSIS OF ALGORITHMS (CS, IT)

(New Scheme – 2010 Admissions onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions.*

Each question carries 3 *marks.*

1. What are Recursive algorithm? Explain with a simple example.
2. Explain the notion of Control Abstraction.
3. Describe Monte Carlo method.
4. What is Minimum Cost Spanning Tree?
5. What is your idea behind Topological sorting?

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*

Each question carries 5 *marks.*

6. Explain Time and Space complexity.
7. Compute the cost associated with element comparison with the help of an example.
8. Compare and contrast Divide and Conquer approach with Dynamic programming.
9. Write notes on Fixed tuple and Variable tuple formulation.
10. Explain Deterministic and Non-deterministic algorithms.

(5 × 5 = 25 marks)

Turn over

Part C

Answer **all** *questions.*

Each question carries 12 *marks.*

11. Explain the Asymptotic Notations and analyses their Worst, Best and Average case complexity.

Or

12. Solve the following recurrence relation :

    (a) $T(n) = T(n/2) + n$.

    (b) $T(n) = T(n/3) + T(2n/3) + n$.

13. Using Divide and Conquer approach, explain Matrix multiplication and its complexity.

Or

14. Explain Merge Sort and analyse its complexity.

15. Explain Kruskal's Algorithm with an example and analyse its complexity.

Or

16. Explain All Pair Shortest Path problem and find the complexity. Also explain how it is solved.

17. Solve N-Queens problem and justify its complexity analysis.

Or

18. State 15-puzzle problem. Mention the best method to solve it on the basis of complexity.

19. Describe Vertex Cover Algorithm. Is it NP–complete.

Or

20. Describe any *one* string matching algorithm in detail. Analyse its complexity.

(5 × 12 = 60 marks)