K17U 1666

Reg. No. : .....

Name : .....

V Semester B.Sc. Degree (CBCSS-Reg./Sup./Imp.) Examination, November 2017

(2014 Admn. Onwards)

Core Course in Computer Science (Elective)

5B12 CSC (E01) : ALGORITHM ANALYSIS AND DESIGN

Time : 3 Hours Max. Marks : 40

SECTION – A

1. **One word** answer : **(8×0.5=4)**
   a) Best case analysis for Quick Sort is _____.
   b) _____ are the languages that allow us to analyze an algorithms running time.
   c) Give any one example for single source shortest path algorithm.
   d) 8 Queen's problem is an example of _____.
   e) Running time for Prim's algorithm is _____.
   f) _____ notation provides an asymptotic lower bound.
   g) Merge sort is an example of _____ method.
   h) Floyd-Warshall algorithm is an example of _____

SECTION – B

Write short notes on **any seven** of the following questions : **(7×2=14)**

2. What is an Algorithm ?
3. Explain Space Complexity.
4. How to find the maximum value into an array ? Explain with algorithm.
5. Define Hamiltonian Cycles.

P.T.O.

6. Define Knapsack problem.
7. Explain Dijkstra's algorithm.
8. Explain Merge Sort.
9. Explain Depth First Search.
10. Explain Single Source shortest path.
11. What is known as graph coloring ?

SECTION – C

Answer **any four** of the following questions : **(4×3=12)**

12. Define Knapsack problem and find the solution. Profits p1 = 10, p2 = 10, p3 = 12, p4 = 18, Weights w1 = 2, w2 = 4, w3 = 6, w4 = 9, capacity m = 15.
13. Compare and explain the asymptotic notations used in algorithm.
14. Explain Bellman-Ford's algorithm with an example.
15. Explain the properties of a good algorithm.
16. Explain Travelling Salesman Problem (TSP).
17. Define 8 Queen's problem.

SECTION – D

Answer **any two** of the following : **(2×5=10)**

18. Solve matrix multiplication using Strassen's method.

$$A = \begin{bmatrix} 4 & 5 \\ 6 & 7 \end{bmatrix} \quad B = \begin{bmatrix} 3 & 2 \\ 1 & 8 \end{bmatrix}$$

19. Explain Prim's algorithm with algorithm and example.
20. Compare BFS and DFS.
21. Explain Floyd-Warshall algorithm with its algorithm and example.