



B.Sc/BCA DEGREE (CBCS) EXAMINATION, MAY 2019

Fourth Semester

Core Course - CS4CRT09 - DESIGN AND ANALYSIS OF ALGORITHMS

(Common for B.Sc Information Technology Model III, Bachelor of Computer Application)

2017 Admission onwards

3965FC9E

Maximum Marks: 80

Time: 3 Hours

Part A

Answer any ten questions.

Each question carries 2 marks.

1. List out algorithm techniques.
2. What is best-case complexity?
3. List any four examples of problems using Divide and Conquer.
4. State the average case and worst case complexity of quicksort.
5. Write the complexity of;
a) Selection sort b) Mergesort
6. What is knapsack problem?
7. Explain the method of Kruskal's algorithm.
8. State Principle of Optimality.
9. Define the single source shortest path problem.
10. Give the time complexity and space complexity of TSP.
11. Define a planar graph.
12. What is a state space tree?

(10×2=20)

Part B

Answer any six questions.

Each question carries 5 marks.

13. Explain the Performance Analysis.
14. Compare time complexity and space complexity.
15. Illustrate the binary search algorithm with an example.
16. State the greedy method. Differentiate between the subset paradigm and ordering paradigm.
17. Explain in detail anyone of the problem solved using Greedy Method.
18. Explain all pair shortest path with algorithm.



19. Write the algorithm for 0/1 knapsack problem with example.
20. What are the basic differences in representing the directed and undirected graph?
21. Explain Hamiltonian circuit with suitable example.

(6×5=30)

Part C

Answer any **two** questions.

Each question carries **15** marks.

22. What is an algorithm? Explain the different characteristics of algorithm. Explain the different areas of algorithm study.
23. Write an algorithm for Merge Sort and Derive its time complexity.
24. Explain Prim's algorithm with an example.
25. Explain the graph coloring problem and draw the state space tree for $m=3$ colors and $n=4$ vertices graph.

(2×15=30)