QP CODE: 25019321

25019321

Reg No : .....

Name : .....

B.Sc/BCA DEGREE (CBCS)) REGULAR/ IMPROVEMENT/ REAPPEARANCE / MERCY CHANCE EXAMINATIONS, FEBRUARY 2025

Fourth Semester

Core Course - CS4CRT09 - DESIGN AND ANALYSIS OF ALGORITHMS

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

2017 Admission Onwards

B9432669

Time: 3 Hours Max. Marks : 80

Part A

*Answer any **ten** questions.*

*Each question carries **2** marks.*

1. Define debugging and profiling.
2. Explain asymototic notation.
3. Write straight maxmin algorithm.
4. Explain the advantage of quicksort algorithm over mergesort.
5. Explain the method of strassen's matrix multiplication.
6. Define feasible solution and optimal solution.
7. Define Prim's algorithm.
8. What is multistage graph?
9. What is 0/1 knapsack problem?
10. Give the time complexity and space complexity of TSP.
11. Explain biconnected graph.
12. What is hamiltonian circuit?

(10×2=20)

Part B

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. Write a note on algorithm design techniques.

14. Explain Best, Worst and Average case complexity.
15. Write an alorithm for merge sort using divide and conquer approach with suitable example.
16. Write and explain the Control Abstraction for Greedy method.
17. What you meant by minimum spanning tree? Discuss Kruskal's algorithm.
18. What are the features of Dynamic Programming?
19. Write Bellman and Ford algorithm to compute shortest paths.
20. Write depth first search algorithm.
21. Explain coloring graph with example.

(6×5=30)

Part C

*Answer any **two** questions.*

*Each question carries **15** marks.*

22. Differentiate space complexity and time complexity of algorithms with example.
23. Explain the divide and conquer method. With an algorithm explain anyone application.
24. Write an algorithm for Greedy Knapsack problem. Find an optimal solution to the knapsack instance n=3, m=20, (p1,p2,p3)=(25,24,15) and (w1,w2,w3)=(18,15,10).
25. What is 8 queens problem? How to solve this problem by using backtracking?

(2×15=30)