Turn Over



Max. Marks: 80

QP CODE: 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

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)