23106048

QP CODE: 23106048

Reg No : .....

Name : .....

B.Sc/BCA DEGREE (CBCS) IMPROVEMENT / REAPPEARANCE EXAMINATIONS, MARCH 2023

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

9AB4B53E

Time: 3 Hours Max. Marks : 80

Part A

*Answer any **ten** questions.*

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

1. State Space Complexity.
2. What is best-case complexity?
3. Define control abstraction.
4. Define internal path length.
5. Illustrate the tree structure of merge algorithm of 10 elements.
6. What is Optimal Solution?
7. Define Prim's algorithm.
8. State principle of optimality.
9. Define the single source shortest path problem.
10. What is 0/1 knapsack problem?
11. Define a planar graph.
12. What is hamiltonian circuit?

(10×2=20)

Part B

*Answer any **six** questions.*

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

13. Define algorithm and explain its criteira.
14. Explain the Performance Analysis.
15. Explain selection sort with example.
16. Write the characterstics of Greedy algorithm.
17. Discuss Kruskal's algorithm with suitable example.
18. Explain all pair shortest path with algorithm.
19. Write short note on travelling salesperson problem.
20. Explain in detail Breadth-First Search and traversal with example.
21. What is Backtracking? Write an algorithm for 8-Queen's problem.

(6×5=30)

Part C

*Answer any **two** questions.*

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

22. What are different algorithm design techniques? Explain any two techniques with example.
23. Write an algorithm for Quick Sort and write its time complexity with example list (65,70,75,80,85,60,55,50,45).
24. Write a note on greedy technique. Explain about Knapsack algorithm and solve the data using knapsack problem. M=40, N=4, weights (20,25,10,15), profit (20,40,35,45).
25. State the sum of subset problem and complete the state space tree of the backtracking algorithm applied to the instance n=6,m=30 and w[1:6]={5,10,12,13,15,18}.

(2×15=30)