22101359

QP CODE: 22101359

Reg No : .....

Name : .....

B.Sc/BCA DEGREE (CBCS) IMPROVEMENT / REAPPEARANCE EXAMINATIONS, MAY 2022

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

2FEEB14E

Time: 3 Hours Max. Marks : 80

Part A

*Answer any **ten** questions.*

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

1. Explain asymototic notation.
2. What is average-case complexity?
3. List any four examples of problems using Divide and Conquer.
4. Write the complexity of binary search.
5. Explain divide and conquer seletcion sort.
6. What is minimum spanning tree?
7. Define Prim's algorithm.
8. Write any four examples of Dynamic Programming.
9. Define the single source shortest path problem.
10. What is travelling sales person problem?
11. What is backtracking?
12. What is graph coloring?

(10×2=20)

Part B

*Answer any **six** questions.*

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

13. Explain the properties of an algorithm.

14. Differentiate between time complexity and space complexity.

15. Write an alorithm for merge sort using divide and conquer approach with suitable example.

16. State the greedy method. Differentiate between the subset paradigm and ordering paradigm.

17. Write the characterstics of Greedy algorithm.

18. Explain multistage graph forward method with algorithm.

19. Explain 0/1 knapsack problem with algorithm.

20. Write breadth first search algorithm.

21. Discuss in detail about the biconnected components of the graph.

(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 wih example.

23. a)Distinguish between mergesort and quicksort algorithm.
    b) Evaluate the complexity of both algorithms.

24. Explain Knapsack problem using Greedy method.

25. What is Hamilitonian problem? Explain with example using backtracking approach.

(2×15=30)