

18. Why do we say quick sort is an unstable sorting method? Write an algorithm to prove the same.
19. Discuss the greedy algorithm for knapsack problem in detail.
20. Explain the 8-queens algorithm with suitable example.

S.No. 5191

RCCS 10 CA 5 /
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(For candidates admitted from 2010–2011 onwards)

B.C.A./B.Sc. DEGREE EXAMINATION, APRIL 2022

Computer Science / Computer Applications/ Information
Technology – Major

DATA STRUCTURES AND ALGORITHMS

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20)

Answer ALL questions.

1. Define Data Structures.
2. State the different types of linked lists
3. Define Degree of the node
4. What is a minimum spanning tree?
5. What is an algorithm?
6. Define Searching

7. Define 0/1 knapsack problem.
8. What is meant by Optimal Solution for Job Sequencing with deadlines.
9. State Sum of Subsets problem.
10. What is graph coloring give an example?.

PART B — ($5 \times 5 = 25$)

Answer ALL questions, choosing either (a) or (b).

11. (a) Compare and contrast the operations of stack and queue.

Or

- (b) What is linked list? Explain briefly the linear singly linked list representation with example.

12. (a) Describe briefly the representation and operations of Binary Trees.

Or

- (b) What is Graph? What are the different ways of representing a graph? Explain.

13. (a) Explain the basic concept of Merge sort.

Or

- (b) Write the algorithm to find the minimum and maximum elements of the given set of numbers.

14. (a) Write short notes on optimal storage on tapes.

Or

- (b) Elucidate the objective of single source shortest paths algorithm.

15. (a) Explain subset-sum problem and discuss the possible solution strategies using back tracking.

Or

- (b) What is the rule for graph coloring? Explain

PART C — ($3 \times 10 = 30$)

Answer any THREE questions.

16. Discuss the linked representation of Stack Memory with example.

17. Explain the traversal methods in binary tree with example.