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(FOR THE CANDIDATES ADMITTED

24PCS103

DURING THE ACADEMIC Year 2024-2026 ONLY)

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : NOVEMBER 2024

M.SC. COMPUTER SCIENCE

MAXIMUM MARKS: 75

SEMESTER: I

TIME : 3 HOURS

**24PCS103- DESIGN & ANALYSIS OF COMPUTER ALGORITHMS**

**SECTION - A**

**(10 X 1 = 10 MARKS)**

**ANSWER THE FOLLOWING QUESTIONS.**

**MULTIPLE CHOICE QUESTIONS.**

- 1) Two main measures for the efficiency of an algorithm are \_\_\_\_\_. (K1)
  - a) Processor and memory
  - b) Complexity and capacity
  - c) Time and space
  - d) Data and space
- 2) Which of the following technique is not used to solve a 0-1Knapsack problem? (K1)
  - a) Greedy
  - b) Dynamic programming
  - c) Branch and Bound
  - d) Matrix
- 3) In dynamic programming, the technique of storing the previously calculated values is called \_\_\_\_\_. (K1)
  - a) Saving value property
  - b) Storing value property
  - c) Memorization
  - d) Mapping
- 4) What is the type of the algorithm used in solving the 8 Queens problem? (K1)
  - a) Greedy
  - b) Dynamic
  - c) Branch and Bound
  - d) Backtracking.
- 5) In Knapsack problem, where the objective function is to minimize the profit is \_\_\_\_\_. (K1)
  - a) Greedy
  - b) Dynamic 0 / 1
  - c) Back tracking
  - d) Branch & Bound 0/1

**ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES**

- 6) Explain the depth first search and traversal. (K2)
- 7) Define: "Merge Sort". (K2)
- 8) Illustrate the use of flow shop scheduling. (K2)
- 9) Relate the advantages of backtracking. (K2)
- 10) Write a note on Least Cost (LC) Search. (K2)

**SECTION – B (5 X 5 = 25 MARKS)**

**ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.**

- 11) a) Discover the concept of Priority Queues. (K3)  
(or)  
b) Examine the techniques for binary tree. (K3)

(CONT...2)

- 12) a) Determine the procedure for Quick sort algorithm with example. **(K3)**  
(or)  
b) Evaluate the algorithm for searching an element using Binary search method. **(K3)**
- 13) a) Summarize the multistage graph with simple example. **(K3)**  
(or)  
b) Estimate the algorithm for the 0/1 Knapsack problem using dynamic programming. **(K3)**
- 14) a) Show the requirements that are needed for performing backtracking. **(K3)**  
(or)  
b) Outline the methods used for graph coloring. **(K3)**
- 15) a) Illustrate the need of FIFO Branch and Bound. **(K3)**  
(or)  
b) Describe the salient features of task scheduling problem. **(K3)**

**Section-C (5 X 8 = 40 MARKS)**

**ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.**

- 16) a) Elaborate the procedure to insert an element into a Queue. **(K4)**  
(or)  
b) Analyze the steps involved in algorithm specification in design and analysis of algorithms. **(K5)**
- 17) a) Demonstrate the implementation of Minimum cost spanning tree. **(K4)**  
(or)  
b) Assess the procedure for SingleSource shortest path. **(K5)**
- 18) a) Identify the all pairs shortest path problem in dynamic programming. **(K4)**  
(or)  
b) Elucidate the basic concept of traveling salesman problem. **(K4)**
- 19) a) Formulate the Hamiltonian cycle problem in backtracking. **(K5)**  
(or)  
b) Conclude the 8-Queen problem using backtracking method. **(K5)**
- 20) a) Integrate the control abstractions for Least Cost (LC) search. **(K4)**  
(or)  
b) Estimate the algorithm for median of the two sorted arrays. **(K5)**

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