April - May - 2026

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Total No. of Questions : 5]

SEAT No. :

PF-5655

[Total No. of Pages : 3

[6651]-32
M.C.A.
MANAGEMENT
DAA 602 MJ : Design & Analysis of Algorithm
(2024 Pattern) (Semester - III)

Time : 2½ Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) *All questions are compulsory.*
2) *Each question has an internal choice.*
3) *Assume any suitable data if necessary.*
4) *Use of non-programming calculator is allowed.*

Q1) Solve any two : **[2 × 5 = 10]**

a) Define time & space complexity of algorithm For best, average & worst case analysis. **[5]**

b) Write Rabin - karp algorithm for string matching. **[5]**

c) Explain different types of algorithm design paradigms. **[5]**

Q2) a) Write a divide & conquer algorithm to find a maximum & minimum element from an array. **[5]**

b) Explain binary search algorithm & solve it by using following given data. **[5]**

[5, 7, 9, 13, 32, 33, 42, 54, 56, 88]

OR

c) Solve the following data by using Maxheap **[10]**

[8, 73, 17, 23, 58, 16, 5, 101]

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Q3) a) Find optimal solution for the fractional knapsack problem where N = 7, capacity [m] = 28, P [7] = [9, 5, 2, 7, 6, 6, 3], w [7] = [2, 5, 6, 11, 1, 9, 1]. **[5]**

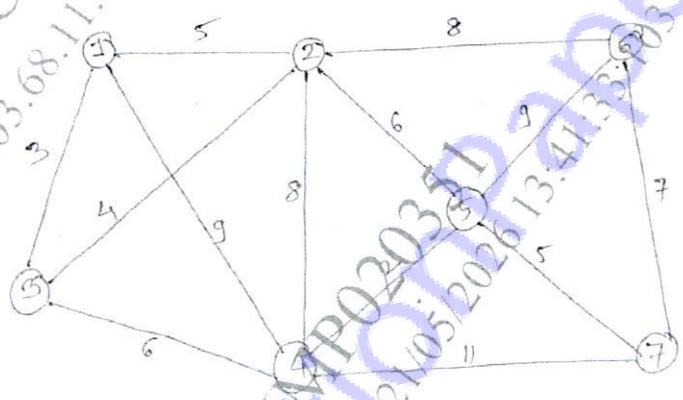
b) Find the optimal job solution for the given instance of job sequencing with a deadline using greedy method. N = 9

P (9) = 15, 19, 30, 18, 18, 10, 23, 16, 20

D (9) = 7, 2, 5, 3, 4, 5, 2, 7, 3 **[5]**

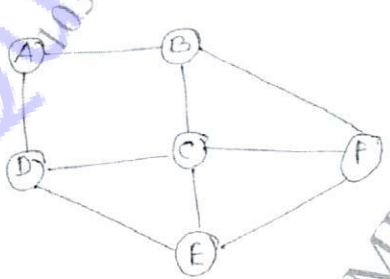
OR

c) Define MST & solve the following graph by using prim's algorithm. **[10]**



Q4) a) Discuss N-queen problem and solve 4-queen problem with all possible solutions. **[5]**

b) Apply backtracking graph coloring method for the following graph. **[5]**



OR

c) Explain the concept of dynamic programming and Find the optimal solution by using given approach for following 0/1 knapsack problem N = 5, knapsack capacity = 11,
P[5] = [1, 9, 19, 25, 33], w[5] = [1, 3, 6, 7, 8] **[10]**

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Q5) Solve any Two **[2 × 5 = 10]**

a) Write a Travelling salesman problem approximation algorithm. **[5]**

b) Explain NP - Hard & NP - complete complexity classes. **[5]**

c) Write hill climbing algorithm. **[5]**



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