

End Semester Examination

May-June 2023

CET3016B - Analysis of Algorithms

Schedule ID: 18758

Faculty/School	Faculty of Engineering & Technology	Term	VI
Program	Third Year B. Tech	Duration	1 Hours 30 Minutes
Specialization		Max. Marks	40

Read the instructions provided for every question properly before attempting the answer.

Section - 1 : contain(s) 10 question(s) and each question carries 5 mark(s). You can answer any 8 questions out of 10.

Click **Finish** only after completion of the Exam.

Section - 1 (8 X 5 Marks)

Answer any 8 questions

1	Solve the recurrence equation with forward substitution method. $T(n) = T(n-1) + n$ with initial condition $T(0) = 0$	5 marks	CO1	Applying
2	Find an optimal solution using knapsack greedy approach where $n=3$, $m=20$ (P_1, P_2, P_3) = (30, 21, 18), (w_1, w_2, w_3) = (18, 15, 10)	5 marks	CO1	Analysing
3	Distinguish between Dynamic programming and Divide and conquer technique.	5 marks	CO1, CO2	Analysing
4	Solve the following knapsack problem by using dynamic programming, Capacity of Knapsack is $M=6$, Weight = (2, 3, 4), Value (1, 2, 5)	5 marks	CO2	Applying
5	Solve the Traveling salesperson problem by using dynamic programming.	5 marks	CO2	Applying

0	9	8	8
12	0	13	6
10	9	0	5
20	15	10	0

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$$V(i, w) = \max(V(i-1, w), V(i-1, w-w[i]) + P[i])$$

6	✓ Explain the difference between backtracking and branch and bound strategy.	5 marks	CO3	Applying
7	✓ Describe five advantages of backtracking technique.	5 marks	CO3	Understanding
8	✗ What is the control abstraction for least cost search in branch and bound strategy.	5 marks	CO4	Understanding
9	✓ Explain Cook's Theorem. Explain P and NP class.	5 marks	CO4	Applying
10	✗ Explain pros and cons of parallel algorithms.	5 marks	CO4	Applying

END OF QUESTION PAPER