

Problem 1. Algorithm Design. [20 points]

Problem 2. Dynamic Programming 1. [20 points]

(a) Define the entries of your table in words. E.g., $T(i)$ is ..., or $T(i, j)$ is

(b) State the recurrence for the entries of your table in terms of smaller subproblems.

(c) Write pseudocode for your algorithm to solve this problem.

(d) Analyze the running time of your algorithm.

Problem 3. Dynamic Programming 2. [20 points]

(a) Define the entries of your table in words. E.g., $T(i)$ is ..., or $T(i, j)$ is

(b) State the recurrence for the entries of your table in terms of smaller subproblems.

(c) Write pseudocode for your algorithm to solve this problem.

(d) Analyze the running time of your algorithm.

Problem 4. FFT Short Answer. [15 points]**Instructions:**

Completely fill just ONE circle per question. If you need to change your answer make it clear what is your final answer.

Part (a):

☐ A ☐ B ☐ C ☐ D ☐ E

Part (b):

☐ A ☐ B ☐ C ☐ D ☐ E

Part (c):

☐ A ☐ B ☐ C ☐ D ☐ E

Part (d):

☐ A ☐ B

Part (e):

☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G

Problem 5. Recurrences. [15 points]**Instructions:**

Completely fill just ONE circle per question. If you need to change your answer make it clear what is your final answer.

Part (1):

☐ A ☐ B ☐ C ☐ D ☐ E ☐ F

Part (2):

☐ A ☐ B ☐ C ☐ D ☐ E ☐ F

Part (3):

☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G