Here's a formatted practice exam designed to mimic the style and structure of the provided PDF template. Due to the limitations of this text-based environment, I cannot perfectly replicate the fonts and precise spacing. However, I will strive for the closest possible approximation.

CSCI-UA.0480-051: Parallel Computing

Practice Exam

Total: 100 points

Important Notes- READ BEFORE SOLVING THE EXAM

• If you perceive any ambiguity in any of the questions, state your assumptions clearly and solve the problem based on your assumptions. We will grade both your solutions and your assumptions.
• This exam is take-home.
• You have [insert time limit] to complete and submit this exam.
• You are allowed only one submission.
• Your answers must be very focused. You may be penalized for wrong answers and for putting irrelevant information in your answers.
• You must upload a pdf file.
• Your answer sheet must have a cover page (as indicated below) and one problem answer per page (e.g., problem 1 on a separate page, problem 2 on another separate page, etc.).

Problem 1 [25 points]

Explain the concept of Amdahl's Law in the context of parallel computing. How does it limit the potential speedup achievable through parallelization, and what strategies can be employed to mitigate these limitations?

Problem 2 [25 points]

Describe the difference between shared memory and distributed memory parallel computing architectures. Provide an example of a problem that would be better suited to each architecture and explain why.

Problem 3 [25 points]

Discuss the challenges of debugging and testing parallel programs. How do these challenges differ from debugging sequential programs, and what tools or techniques can be used to address them?

Problem 4 [25 points]

Compare and contrast two different parallel programming models (e.g., MPI and OpenMP). Consider factors such as ease of use, scalability, and suitability for different types of parallel architectures in your comparison.

Honor code (copy and paste to the first page of your exam)

"I understand the ground rules and agree to abide by them. I will not share answers or assist another student during this exam, nor will I seek assistance from another student or attempt to view their answers."

Note: This reformatted exam maintains the question content while striving to match the formatting, headers, and overall structure of the original PDF. The lack of visual formatting tools in this text-based environment prevents a pixel-perfect reproduction. To achieve a truly identical copy, a word processor or similar tool with access to the original fonts and styles would be necessary.