



BRAC University
Department of Computer Science and Engineering
CSE 422: Artificial Intelligence (B)
Quiz 02: Spring 2025 Time: 30 Minutes Marks: 10

Name		ID		Section
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1. How can you compare between two incomplete search algorithms? [2]

average runtime, average success cases, average solution quality

2. **The Arrival Problem** You are given sentences in a language that you know nothing about, where the word order has been lost. Given the words, you are requested to put them back in a sequence, that has a sensible meaning. For example, in English language, the words fun, exams, of, are, questions can be put together in this valid ordering: ‘questions of quiz are fun’. As stated, the language used is completely unknown to you. Luckily, you can use an oracle that assigns a score to every sequence you introduce, according to how ridiculous it is (for example, in English, the sequence ‘quiz of questions’ is considered less ridiculous than ‘of questions quiz’). Now answer the following:

- (a) Given a set of n words, what is the problem search space size? (you may assume that all words are unique.) [2]

$n!$

- (b) You will be using local search. Define a neighborhood for hill climbing / simulated annealing. Provide example. [3]

swap, $\{\text{fun}, \text{exams}, \text{of}, \text{are}, \text{questions}\} \rightarrow \{\text{of}, \text{exams}, \text{fun}, \text{are}, \text{questions}\}$

- (c) What is the size of your defined neighborhood? [3]

${}^n C_2$