



Attempt the following questions.

№ of Questions: 2 in 1 page(s)
Total Points: 10 (10 Marks)

Question 1:

(05 pts)

a) What is AI?

b) State five applications of AI.

c) Define a *Rational Agent*.

d) Define the problem of solving *8-puzzle* formally.

e) Name the algorithm that results from Simulated annealing with $T = 0$ at all times.

Question 2:

(05 pts)

a) Given an architecture with n bits of storage, how many different possible agent programs are there?

b) Derive the state space size of the *n-queens* problem in the “efficient” incremental formulation.

c) Derive time and space complexities of *Iterative Deepening Search*.

d) Consider the sensorless version of the **erratic** vacuum world. Draw the belief-state space reachable from the initial belief state $\{1, 2, 3, 4, 5, 6, 7, 8\}$.

e) Which of the following are correct? $\text{False} \models \text{True}$, $\text{True} \models \text{False}$, $(A \wedge B) \models (A \leftrightarrow B)$, $(A \leftrightarrow B) \models A \vee B$.

Good Luck
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