

Name: _____

Student ID: _____

- (21pts) 1. For each of the following assertions, say whether it is true or false.
- (a) ___ One of our goals in AI is to design an agent program that implements the agent function—the mapping from percepts to actions.
 - (b) ___ A rational agent must behave as if it possesses a utility function whose expected value it tries to maximize.
 - (c) ___ An agent that senses only partial information about the state cannot be perfectly rational.
 - (d) ___ Every agent is rational in an unobservable environment.
 - (e) ___ There exist pure reflex agents that do not behave rationally in some task environments.
 - (f) ___ There exists a task environment in which every agent is rational.
 - (g) ___ A perfectly rational poker-playing agent never loses.
 - (h) ___ In general, an agent's choice of action at any given instant can depend on its built-in knowledge and on the entire percept sequence observed to date.
 - (i) ___ The agent function is an abstract mathematical description; the agent program is a concrete implementation, running within some physical system.
 - (j) ___ Every agent function is implementable by some program/machine combination.
 - (k) ___ Suppose an agent selects its action uniformly at random from the set of possible actions. There exists a deterministic task environment in which this agent is rational.
 - (l) ___ It is possible for a given agent to be perfectly rational in two distinct task environments.
 - (m) ___ The “transition model” of the world depends on how the world evolves independently of the agent. It does not consider the affects of the agent's action on the world.
- (3pts) 2. Consider a simple thermostat that turns on a furnace when the temperature is at least 3 degrees below the setting, and turns off a furnace when the temperature is at least 3 degrees above the setting. Is a thermostat an instance of a simple reflex agent, a model-based reflex agent, or a goal-based agent?
- ☐ simple reflex agent
 - ☐ model-based reflex agent
 - ☐ goal-based agent

(4pts) 3. How would you characterize the task environment of a crossword puzzle?

- ☐ fully observable
- ☐ partially observable
- ☐ unobservable

(4pts) 4. An behavior (action) of an agent is described by which of the following?

- ☐ Perception sequence
- ☐ Agent function
- ☐ Sensors and Actuators
- ☐ Environment in which agent is performing