National University of Computer & Emerging Sciences
Artificial Intelligence (CS401)
Class Activity #1

Dated: February 01, 2016 Marks: 40
Time: 40 min. Std-ID: ____SOL_____

Question No. 1 Indicate whether True or False

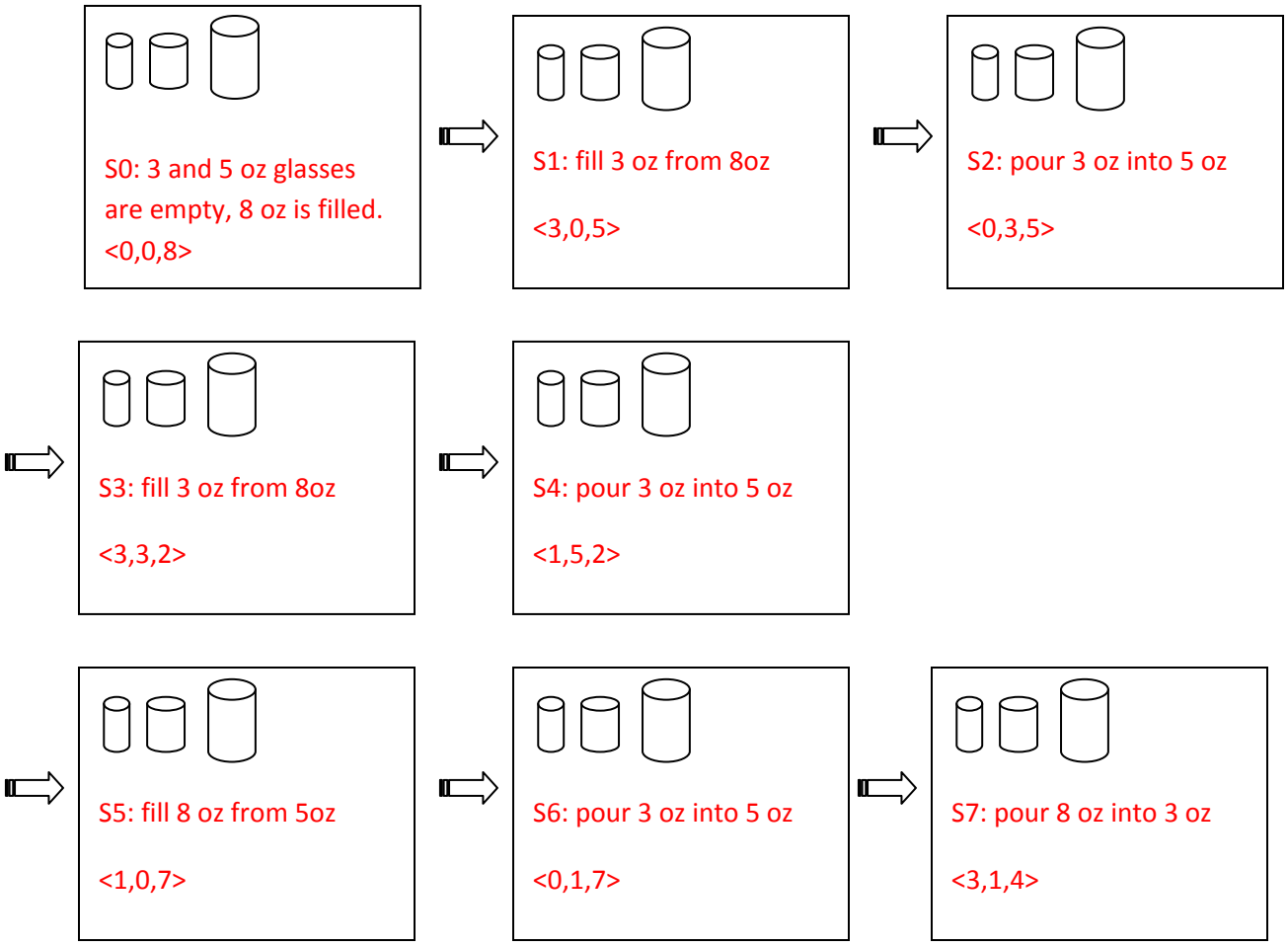
1. An agent that senses only partial information about the state can be perfectly rational. T
2. A simple reflexive agent is the simplest type of agent possible. T
3. A simple reflexive agent cannot have limited intelligence. F
4. A simple reflexive agent can also work rationally in unobservable environment. F
5. Every agent function is implementable by some program/machine combination. F
6. It is possible for a given agent to be perfectly rational in two dissimilarly distinct task environments. T
7. Every agent is rational in a fully observable environment. T
8. A model based agent has more clear precepts of a task environment. T
9. A goal-based agent has an explicit goal criterion that cannot be altered. F
10. In utility-based agent's architecture, an agent's utility function is essentially an internalization of the performance measure. T

Question No. 2 Compare the following pair of terms. [5 x 2]

(a)	**Simple Reflexive Agent**	**Model Based Agent**
	Simple reflex agents respond directly to percepts	Model-based reflex agents maintain internal state to track aspects of the world that are not evident in the current percept.
	It has limited intelligence	It is more responsive
	It has well define sequence of action	The sequence of action is based on internal state from the model.
(b)	**Agent's Program**	**Agent's Function**
	An agent program implements an agent's function.	It defines the activity of an agent.
	The response to a percept sequence is mainly coded in a program.	It is can be used to change the environment.

Question No. 3 State-Space-Graph/Search

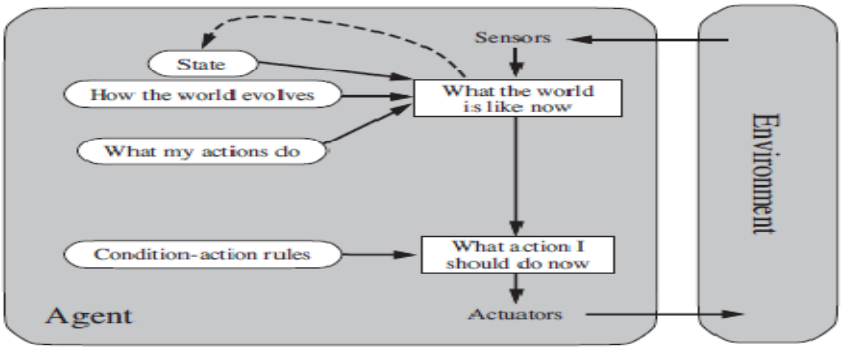
There are three glasses on the table - 3, 5, and 8 oz. The first two are empty, the last contains 8 oz of water. By pouring water from one glass to another make at least one of them contain exactly 4 oz of water. - Provide state-space transition graph for the entire problem. Clearly mark the initial state and goal state. You can only provide the state(s) that are part of a possible solution. [10]



Question No. 4 Intelligent Agents

Consider an agent for " Buying a week's worth of groceries on the Web."- which agent architecture will be your choice? why? Identify the PEAS environment for this. Justify your answer. [10]

The best choice will be a Model based agent, which can build a list of groceries item consumed per week (Model) for a particular house. It will be simple and satisfy the objective of the task.



Performance	List of items selected for purchase; unit price of these item; total cost of groceries list.
Environment	Web portals of groceries providers (Walmart like)
Actuators	Selecting required quantity of items into the cart
Sensors	Item list with prices for browser able content from the portals.