**Assignment No. : 1**

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**Subject : AI**

**Q1. Define in your own words: (a) Intelligence, (b) Artificial Intelligence, (c) Agent, (d) Rationality, (e) Logical Reasoning.**

**Ans:**

a) Intelligence : Intelligence is the the ability to solve problems, no matter how miniscule or extraordinary they are. Not only should we be able to solve these problems, but also find improvements to our solutions and continue to expand our knowledge. Being intelligent is one thing, but being able to expand our Intelligence is far more valuable.

b) Artificial Intelligence : Artificial Intelligence is a piece of machinery, programming, code, etc that was built by humans with the specific task to solve a problem or many problems. But as I’ve stated before, solving problems is one thing, expandingthat problem solving knowledge is another. Artificial Intelligence should keep records of its attempts to solve a problem so that it can learn from it’s progress and its mistakes.

c) Agents : Agents are things that perform actions. They are given instructions and are expected to follow them; but there’s more to it than just following those actions. Agents must also be able to operate on their own, change their actions depending on their surroundings, maintain themselves over an elongated period of time, and develop their own goals to pursue.

d) Rationality : Rationality is doing what is expected of you or what is acceptable to do. When a problem arises there are specific ways that one would solve it; these are filed under Rationality.

For example: Your car runs out of gas while driving on the highway and you pull over to solve the problem. A rational action would be to call AAA or a tow service. An irrational action would be to try an siphon gas from a nearby parked police cruiser.

e) Logical Reasoning : Logical Reasoning is the ability to perceive a problem logically and know which solution is best to solve it.

**Q2. How could introspection—reporting on one’s inner thoughts—be inaccurate? Could I be wrong about what I’m thinking? Discuss.**

**Ans:**

Introspection can be inaccurate in many ways. One of the main reasons is that everyone thinks in different ways, so the way a program perceives one person;s thoughts may be different from the way it perceives another person’s thought, or even the same person just at a different point in time. The way we think changes over time so it’s hard to keep an accurate report on our thoughts.

**Q3. Let us examine the rationality of various vacuum-cleaner agent functions.**

1. Show that the simple vacuum-cleaner agent function described in Figure 2.3 is indeed rational under the assumptions listed on page

Ans:

To be rational in these circumstances it maximizes its performance measure 1 pt per each clean square. If there is dirt here, suck gains you a sure point now and doesn’t impact your chances of getting other dirt in the future, so suck. If There’s no dirt here, the only possible way of getting another point in the future is to move to the other square.

2. Describe a rational agent function for the case in which each movement costs one point. Does the corresponding agent program require internal state?

Ans:

This objective function doesn’t require memory even though the problem is partial order. But what if you have to pay 1 for each move or such action? Then you have to remember where you are.

3. Discuss possible agent designs for the cases in which clean squares can become dirty and the geography of the environment is unknown. Does it make sense for the agent to learn from its experience in these cases? If so, what should it learn? If not, why not?

Ans:

In the absence of special distributional assumptions, our first policy is probably best. Though if we could learn the rates at which the individual squares become dirty and adjust our policy accordingly, that would be cool.