Module 1 – Worksheet 1

Multiple Choice Questions

Q.No 1. What is an intelligent agent in AI?
a) A software program that performs simple tasks
b) A system that mimics human intelligence to achieve goals
c) An algorithm for sorting data
d) A basic input-output system
Answer:

Q.No 2. Which of the following is a key characteristic of intelligent agents?
a) Random behavior
b) Learning from experience
c) Fixed rule execution
d) Limited adaptability
Answer:

Q.No 3. What does the term "perception" refer to in intelligent agents?
a) The ability to hear sounds
b) The process of sensing and interpreting information from the environment
c) The ability to taste
d) The speed of decision-making
Answer:

Q.No 4. In the context of intelligent agents, what is "actuation"?
a) The process of making decisions
b) The ability to learn from data
c) The execution of actions in the environment
d) The ability to perceive information
Answer:

Q.No 5. In the agent-environment framework, what does the environment represent?
a) The hardware on which the agent runs
b) The external system with which the agent interacts
c) The internal decision-making logic of the agent
d) The agent's memory storage
Answer:

Q.No 6. What is the primary function of sensors in Intelligent Agents?
a) Decision making
b) Interaction with the environment
c) Learning algorithms
d) Memory storage
Answer:

Q.No 7. In an AI system, what is the purpose of the interaction between sensors and actuators?

a) To optimize learning algorithms
b) To improve decision-making
c) To enable the agent to perceive and act in the environment
d) To enhance memory storage

Answer:

Q.No 8. For the following, the partial tabulation of a simple agent function for the vacuum-cleaner world, what is the corresponding action for the data "[B, Clean]"?

Percept Sequence	Action
[A, Clean]	Right
[A, Dirty]	Suck
[B, Clean]	Left
[B, Dirty]	Suck
[A, Clean], [A, Clean]	Right
[A, Clean], [A, Dirty]	Suck

a) Left
b) Right
c) Suck
d) Clean

Answer:

Q.No 9. What is the challenge for AI in writing programs for intelligent behavior?

a) Efficient memory usage
b) Generating vast lookup tables
c) Producing rational behavior from small programs
d) Implementing agent functions

Answer:

Q.No 10. What is the primary characteristic of a "simple reflex agent"?

a) It considers the entire percept history.
b) It has complex decision-making rules.
c) It relies only on the current percept.
d) It uses advanced machine learning algorithms.

Answer:

Module 1 – Worksheet 2

Fill in the blanks

Q.No.1. An agent is anything that can be viewed as perceiving its environment through _____ and acting upon that environment through _____.
Answer:

Q.No.2. We use the term _____ to refer to the agent's perceptual inputs at any given instant.
Answer:

Q.No.3. The vacuum agent perceives which square it is in and whether there is _____ in the square; if dirty, then _____; otherwise, move to the other square.
Answer:

Q.No.4. The behavior of a rational agent can become effectively independent of its prior knowledge after sufficient _____.
Answer:

Q.No.5. If the next state of the environment depends on the current state and the action executed by the agent, the environment is considered _____.
Answer:

Match the following

Associate the given *Agent type* with the corresponding PEAS description for an automated taxi.

PART A		PART B		ANSWER
(1)	Performance Measure	(A)	Roads, other traffic, pedestrians, customers.	
(2)	Environment	(B)	safe, legal, comfortable trip, maximize profits.	
(3)	Actuators	(C)	Cameras, Sonar, Speedometer, GPS, odometer, accelerometer, engine sensors, keyboard	
(4)	Sensors	(D)	Steering, accelerator, brake, signal, horn, display	

Answer
    (1) – (   )
    (2) – (   )
    (3) – (   )
    (4) – (   )

Module 1 – Worksheet 3

Q.No 1: Is it rational for the agent to oscillate needlessly back and forth after all the dirt is cleaned up? Why? How might a vacuum-cleaner agent adapt its behavior in an environment where clean squares can become dirty again?

Hint: The agent's behavior should be evaluated based on its contribution to the performance measure, which is having a clean floor.

Q.No 2: Explain the four basic kinds of agent programs.

Hint:
There are four basic kinds of agent programs that embody the principles underlying almost all intelligent systems.

Q. No 3: Explain the difference between a reflex agent and a goal-based agent in artificial intelligence, and how does the inclusion of goal information impact decision-making?

Hint:
Consider the role of goal information in decision-making for agents. How does a goal-based agent use this information to make decisions, and how does it differ from the decision-making process of a reflex agent? Think about flexibility, adaptability, and the explicit representation of knowledge.

Q. No: 4. Explain the significance of utility in the context of agent behavior and decision-making, and how does it relate to goals and performance measures?

Hint: Consider the limitations of goals alone in generating high-quality behavior for agents. Explore the role of utility as a more general performance measure and its relationship with an agent's utility function. Think about the advantages of utility-based agents in handling conflicting goals, uncertainties, and the tradeoff between multiple goals.