DEMO Quiz 2 By MPS

Artificial Intelligence

1. **What is an intelligent agent?**
 a) A software program that interacts with its environment through sensors and actuators.
 b) A hardware device that performs tasks without any interaction with the environment.
 c) A human operator controlling a machine.
 d) A theoretical concept with no practical implementation.
 Answer: a) A software program that interacts with its environment through sensors and actuators.

2. **Which of the following best describes the concept of rationality in AI agents?**
 a) An agent that always makes the correct decision.
 b) An agent that maximizes its expected performance measure based on percepts and built-in knowledge.
 c) An agent that has complete knowledge of the environment.
 d) An agent that never makes mistakes.
 Answer: b) An agent that maximizes its expected performance measure based on percepts and built-in knowledge.

3. **What does PEAS stand for in the context of intelligent agents?**
 a) Performance, Environment, Actuators, Sensors.
 b) Perception, Environment, Actions, Sensors.
 c) Performance, Evaluation, Actions, Sensors.
 d) Perception, Evaluation, Actuators, Sensors.
 Answer: a) Performance, Environment, Actuators, Sensors.

4. **Which of the following is an example of a fully observable environment?**
a) A chess game where the agent can see the entire board.
b) A self-driving car navigating through fog.
c) A vacuum cleaner operating in a room with walls.
d) A spam filter processing incoming emails.
Answer: a) A chess game where the agent can see the entire board.

5. **What is the primary difference between a deterministic and a stochastic environment?**
a) In a deterministic environment, the next state is completely determined by the current state and action, while in a stochastic environment, there is randomness.
b) In a stochastic environment, the agent has complete knowledge of the environment, while in a deterministic environment, it does not.
c) A deterministic environment is always fully observable, while a stochastic environment is partially observable.
d) A stochastic environment is always dynamic, while a deterministic environment is static.
Answer: a) In a deterministic environment, the next state is completely determined by the current state and action, while in a stochastic environment, there is randomness.

6. **Which of the following is an example of a simple reflex agent?**
a) A vacuum cleaner that cleans based on current sensor input without memory.
b) A self-driving car that plans a route to a destination.
c) A chess-playing agent that evaluates future moves.
d) A spam filter that learns from past emails.
Answer: a) A vacuum cleaner that cleans based on current sensor input without memory.

7. **What is the role of the transition function in a model-based reflex agent?**
a) It maps the current state and action to the next state.
b) It evaluates the utility of each possible state.
c) It selects actions based on the current percept only.
d) It stores the history of all past percepts.
Answer: a) It maps the current state and action to the next state.

8. **Which of the following is true about a goal-based agent?**
a) It selects actions to reach a defined goal state.
b) It evaluates the desirability of each state using a utility function.
c) It uses only current percepts to select actions.
d) It does not require any memory of past states.
Answer: a) It selects actions to reach a defined goal state.

9. **What is the primary performance measure for a utility-based agent?**
a) The discounted sum of expected utility over time.
b) The number of actions taken to reach a goal.
c) The accuracy of its percepts.
d) The speed at which it can process sensor data.
Answer: a) The discounted sum of expected utility over time.

10. **Which of the following is an example of a multi-agent environment?**
a) A chess game between two players.
b) A vacuum cleaner operating in a single room.
c) A spam filter processing emails.
d) A thermostat controlling the temperature in a house.
Answer: a) A chess game between two players.

11. **What is the main characteristic of a static environment?**
a) The environment does not change while the agent is deliberating.
b) The environment changes only when the agent takes an action.
c) The environment is partially observable.
d) The environment is stochastic.
Answer: a) The environment does not change while the agent is deliberating.

12. **Which of the following is true about a rational agent?**
a) It always makes the correct decision.
b) It maximizes its expected performance measure based on percepts and built-in knowledge.
c) It has complete knowledge of the environment.
d) It never makes mistakes.
Answer: b) It maximizes its expected performance measure based on percepts and built-in knowledge.

13. **What is the primary difference between a simple reflex agent and a model-based reflex agent?**
a) A model-based reflex agent uses memory to track the state of the environment, while a simple reflex agent does not.
b) A simple reflex agent uses a utility function, while a model-based reflex agent does not.
c) A model-based reflex agent is always rational, while a simple reflex agent is not.
d) A simple reflex agent can learn from past experiences, while a model-based reflex agent cannot.
Answer: a) A model-based reflex agent uses memory to track the state of the environment, while a simple reflex agent does not.

14. **Which of the following is an example of a partially observable environment?**
a) A self-driving car navigating through fog.
b) A chess game where the agent can see the entire board.
c) A vacuum cleaner operating in a room without walls.
d) A thermostat controlling the temperature in a house.
Answer: a) A self-driving car navigating through fog.

15. **What is the primary role of sensors in an intelligent agent?**
a) To perceive the environment and provide percepts to the agent.
b) To execute actions in the environment.
c) To evaluate the utility of each state.
d) To store the history of past percepts.
Answer: a) To perceive the environment and provide percepts to the agent.

16. **Which of the following is true about a utility-based agent?**

a) It evaluates the desirability of each state using a utility function.
b) It selects actions to reach a defined goal state.
c) It uses only current percepts to select actions.
d) It does not require any memory of past states.
Answer: a) It evaluates the desirability of each state using a utility function.

17. **What is the primary difference between a known and an unknown environment?**
a) In a known environment, the agent knows the transition function, while in an unknown environment, it does not.
b) In an unknown environment, the agent has complete knowledge of the environment, while in a known environment, it does not.
c) A known environment is always fully observable, while an unknown environment is partially observable.
d) An unknown environment is always stochastic, while a known environment is deterministic.
Answer: a) In a known environment, the agent knows the transition function, while in an unknown environment, it does not.

18. **Which of the following is an example of a sequential environment?**
a) A self-driving car navigating through traffic.
b) A vacuum cleaner operating in a single room.
c) A spam filter processing emails.
d) A thermostat controlling the temperature in a house.
Answer: a) A self-driving car navigating through traffic.

19. **What is the primary role of actuators in an intelligent agent?**
a) To execute actions in the environment.
b) To perceive the environment and provide percepts to the agent.
c) To evaluate the utility of each state.
d) To store the history of past percepts.
Answer: a) To execute actions in the environment.

20. **Which of the following is true about a learning agent?**
a) It modifies its agent program to improve performance over time.

b) It uses only current percepts to select actions.
c) It does not require any memory of past states.
d) It always makes the correct decision.
Answer: a) It modifies its agent program to improve performance over time.