

--Question Starting--

3. Match the following approaches to Artificial Intelligence with their underlying principles:

1. Turing Test P. Assesses whether a machine can imitate human intelligence convincingly
2. Rational Agent Q. An agent that perceives its environment and acts optimally based on logical reasoning
3. State Space Representation R. Formalizes problem-solving by modeling states and actions as nodes and edges
4. Heuristic Search Techniques S. Utilizes domain knowledge to guide search towards solutions efficiently

Choose the correct answer from the options given below:

- (1) 1-Q, 2-P, 3-R, 4-S
- (2) 1-R, 2-S, 3-Q, 4-P
- (3) 1-P, 2-R, 3-S, 4-Q
- (4) 1-Q, 2-R, 3-S, 4-P

Answer Key: 4

Solution:

? Turing Test: A measure of machine intelligence based on indistinguishability from human responses, aligning with the idea of convincingly imitating human intelligence.

? Rational Agent: An agent that perceives its environment and acts to maximize its performance measure, grounded in logical decision-making.

? State Space Representation: A formal problem modeling technique that maps problems into states and transitions, enabling systematic exploration.

? Heuristic Search Techniques: Methods that incorporate domain-specific knowledge to prioritize search paths, reducing computational effort.

Hence, Option (4) is the right answer.

--Question Starting--

4. Match the following software design principles and concepts with their descriptions:

A. Abstraction B. Modularity C. Cohesion and Coupling D. Information Hiding

1. Focuses on reducing complexity by hiding unnecessary details and providing simplified interfaces
2. Dividing a system into independent, interchangeable components with well-defined interfaces
3. Ensures that elements within a module work closely together while minimizing dependencies between modules
4. Represents essential features without considering implementation specifics, promoting reusability

Choose the correct answer from the options given below:

- (1) A-4, B-2, C-3, D-1
- (2) A-1, B-2, C-3, D-4
- (3) A-4, B-1, C-2, D-3
- (4) A-2, B-3, C-4, D-1

Answer Key: 3

Solution:

? Abstraction: It encapsulates complex implementation details and exposes only necessary features, facilitating reuse and understanding.

? Modularity: Dividing a system into distinct components that can be developed, tested, and maintained independently.

? Cohesion and Coupling: High cohesion within modules ensures related functionalities are grouped; low coupling minimizes interdependencies, promoting flexibility.

? Information Hiding: Concealing internal module details from others to reduce dependencies and improve maintainability.

Hence, Option (3) is the right answer.