--Question Starting--
Match the following approaches to AI with their fundamental characteristics, considering their reliance on problem representations and search strategies:
1. Approach Characteristic
I. Turing Test A. Emphasizes behavioral indistinguishability from humans, focusing on linguistic and conversational abilities
II. Rational Agent B. Uses explicit representations of the problem space and systematic search techniques to find solutions
III. State Space Search C. Models intelligence as a set of functions that maximize expected utility based on perceptions
Choose the correct answer from the options given below:
(1) I-B, II-C, III-A
(2) I-C, II-A, III-B
(3) I-A, II-B, III-C
(4) I-B, II-A, III-C
Answer Key: 4
Solution:
? Turing Test: It evaluates intelligence based on a machine?s ability to exhibit behavior indistinguishable from a human, essentially relying on linguistic and conversational behavior rather than internal representations.
? Rational Agent: It models decision-making as an agent acting to maximize utility, often employing decision-theoretic frameworks involving perceptions and actions.
? State Space Search: It involves representing problems explicitly as states and transitions, utilizing systematic search algorithms like Min-Max or Alpha-Beta pruning to explore solution paths.
Hence, Option (4) is the right answer.

--Question Starting--
3. Match the following design principles with their core objectives in software architecture:
1. Principles Core Objective
I. Abstraction A. Reduce complexity by hiding unnecessary details
II. Modularity B. Facilitate independent development and maintenance
III. Information Hiding C. Enable easier understanding and reuse of components
Choose the correct answer from the options given below:
(1) I-C, II-A, III-B
(2) I-A, II-C, III-B
(3) I-B, II-A, III-C
(4) I-C, II-B, III-A
Answer Key: 1
Solution:
? Abstraction: Focuses on exposing essential features while hiding implementation specifics, thus reducing perceived complexity.
? Modularity: Divides system into distinct modules that can be developed, tested, and maintained independently, enhancing flexibility.
? Information Hiding: Ensures that internal details of a module are not exposed, promoting encapsulation, security, and ease of maintenance.
Hence, Option (1) is the right answer.