--Question Starting--
Match the following AI approaches with their corresponding characteristics:
1. AI Approach Characteristic
I. Turing Test A. Uses backward and forward reasoning mechanisms
II. Rational Agent B. Relies on evaluating possible outcomes to make optimal decisions
III. Heuristic Search C. Aims to determine if a machine can think humanly
IV. Game Playing D. Optimizes choices under uncertainty using specific algorithms like Alpha-Beta pruning
Choose the correct answer from the options given below:
(1) I-C, II-B, III-A, IV-D
(2) I-A, II-D, III-C, IV-B
(3) I-C, II-D, III-B, IV-A
(4) I-B, II-A, III-D, IV-C
Answer Key: 3
Solution:
? Turing Test: Designed to see if a machine can mimic human intellect to the extent that humans cannot distinguish it from another human.
? Rational Agent: Focuses on achieving the best outcome in a given scenario, often through decision-making processes under uncertainty.
? Heuristic Search: Utilizes strategies to dramatically speed up the process of finding a good enough solution among many possibilities.
? Game Playing: Involves strategic computation like Min-Max and Alpha-Beta cutoff to optimize performance in competitive environments.
Hence, Option (3) is the right answer.

--Question Starting--
Match the following database system concepts with their appropriate descriptions:
1. Database Concept Description
I. Data Models A. Enables users to manipulate and retrieve data
II. Three-Schema Architecture B. Provides a logical structure of the data
III. Database Languages C. Ensures data abstraction and system independence
IV. Centralized Architecture D. Relies on a single database server to handle all requests
Choose the correct answer from the options given below:
(1) I-B, II-C, III-A, IV-D
(2) I-D, II-A, III-C, IV-B
(3) I-C, II-B, III-D, IV-A
(4) I-A, II-D, III-B, IV-C
Answer Key: 1
Solution:
? Data Models: Represent how data is organized, which in turn affects how data can be accessed and manipulated.
? Three-Schema Architecture: This architecture separates the user, logical, and physical aspects of a database, promoting data independence.
? Database Languages: Include SQL and others that facilitate data management tasks.
? Centralized Architecture: All database systems are managed by a single server, simplifying maintenance but potentially creating a bottleneck.
Hence, Option (1) is the right answer.

--Question Starting--
Match the following concepts from fuzzy logic with their correct explanations:
1. Fuzzy Concept Explanation
I. Membership Functions A. Determines the degree of truth as opposed to Boolean logic where true or false is determined
II. Fuzzification B. Process of translating crisp values into degrees of membership

III. Fuzzy Control System C. Uses rules and algorithms to handle fuzzy logic for automatic control
IV. Fuzzy Inference D. Derives conclusions from a set of fuzzy rules
Choose the correct answer from the options given below:
(1) I-A, II-B, III-C, IV-D
(2) I-D, II-C, III-A, IV-B
(3) I-B, II-D, III-C, IV-A
(4) I-C, II-A, III-B, IV-D
Answer Key: 1
Solution:
? Membership Functions: Define how each point in the input space is mapped to a membership value between 0 and 1.
? Fuzzification: The process of transforming crisp numbers into fuzzy sets, usually by determining the degrees of membership to these sets.
? Fuzzy Control System: Implements fuzzy logic in practical applications, often in control systems, to handle uncertainties.
? Fuzzy Inference: Applies fuzzy logic rules to derive conclusions from fuzzy information.
Hence, Option (1) is the right answer.