--Question Starting--
Match the following AI approaches and concepts with their respective descriptions:
1. Approach/Concept Description
I. Turing Test A. Uses tree structures to evaluate possible outcomes in competitive environments
II. Rational Agent B. Relies on performance measures to determine the best sequence of actions
III. State Space Representation C. Evaluates the cognitive abilities of machines through conversation
IV. Min-Max Search D. Represents all possible states and actions leading to a goal state
Choose the correct answer from the options given below:
(1) I-C, II-B, III-D, IV-A
(2) I-B, II-D, III-A, IV-C
(3) I-A, II-C, III-B, IV-D
(4) I-D, II-A, III-C, IV-B
Answer Key: 1
Solution:
? Turing Test: A method proposed by Alan Turing to determine if a machine can exhibit intelligent behavior indistinguishable from a human, evaluated through a conversational test.
? Rational Agent: An agent that acts to achieve the best outcome according to a performance measure.
? State Space Representation: A diagrammatic technique to represent all possible states in which a problem can exist and the transitions between these states due to different actions.
? Min-Max Search: An algorithm used primarily in game playing to minimize the possible loss for a worst-case scenario.
Hence, Option (1) is the right answer.

--Question Starting--
2. Match the following database concepts with their appropriate characteristics:
1. Concept Characteristic
I. Data Models A. Allows for flexibility in changing data structures without affecting the application logic
II. Three-Schema Architecture B. Provides languages for data definition and manipulation
III. Database Languages C. Defines the logical structure of data elements and interrelationships
IV. Centralized DBMS D. Stores data centrally and processes that data via a single database system
Choose the correct answer from the options given below:
(1) I-C, II-A, III-B, IV-D
(2) I-D, II-B, III-A, IV-C
(3) I-B, II-C, III-A, IV-D
(4) I-A, II-D, III-C, IV-B
Answer Key: 2
Solution:
? Data Models: Describes the logical structure of the database, such as relational, hierarchical, or network models.
? Three-Schema Architecture: A framework that separates the user, conceptual, and storage levels, promoting data abstraction and independence.
? Database Languages: These include SQL (Structured Query Language) for defining, manipulating, and accessing data.
? Centralized DBMS: A system where a single database server handles all requests, which simplifies maintenance but can be a bottleneck.
Hence, Option (2) is the right answer.

--Question Starting--
3. Match the following fuzzy set concepts with their correct explanations:
1. Concept Explanation
I. Fuzzification A. Converts crisp input values into degrees of membership
II. Fuzzy Inference B. Applies logical rules to derive conclusions from fuzzy information
III. Defuzzification C. Transforms fuzzy output to a crisp output

IV. Fuzzy Control System D. Uses fuzzy logic to manage uncertain environments
Choose the correct answer from the options given below:
(1) I-A, II-B, III-C, IV-D
(2) I-C, II-D, III-A, IV-B
(3) I-B, II-C, III-A, IV-D
(4) I-D, II-A, III-B, IV-C
Answer Key: 1
Solution:
? Fuzzification: The process of transforming crisp values into grades of membership for linguistic terms of fuzzy sets.
? Fuzzy Inference: A decision-making process that interprets and applies rules within a fuzzy logic system to produce an output distribution.
? Defuzzification: The method by which a fuzzy set is converted back into a single scalar quantity.
? Fuzzy Control System: A control system based on fuzzy logic rather than traditional binary logic.
Hence, Option (1) is the right answer.