PSYCHOLOGY ENTRANCE EXAMINATIONS

Useful for CUET-PG Psychology, GATE & Other M.A/ M.Sc Psychology Entrances

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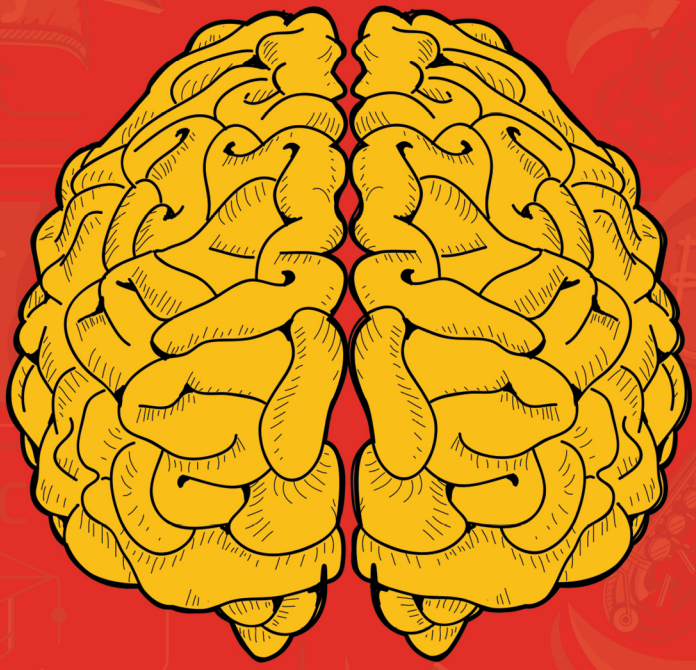

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Chapter 07 Thinking, Problem Solving & Language

Explanations

1. a) concept.
Explanation: A concept is a mental representation or category that encompasses objects, ideas, or events sharing common properties or characteristics. Concepts are fundamental to human cognition, facilitating understanding, categorization, and communication. They allow individuals to organize and interpret information efficiently, enabling effective reasoning, problem-solving, and decision-making. Concepts play a crucial role in various cognitive processes, contributing to our ability to navigate and make sense of the world around us.

2. a) They typically use only content words.
Explanation: Young children's early word combinations often involve primarily content words, such as nouns and verbs, rather than function words like articles and prepositions. This stage is known as telegraphic speech, where children convey meaning with minimal words, focusing on the essential content. As their language skills develop, they gradually incorporate more function words and syntactic structures into their speech. The option stating that their word order is essentially random is incorrect because even though their utterances might be simpler, they still follow certain rules and patterns in their language acquisition process.

3. c) cognition
Explanation: Thinking refers to the mental processes involved in acquiring, processing, understanding, and applying information. It encompasses various cognitive activities such as reasoning, problem-solving, decision-making, and memory. Therefore, "cognition" is the most appropriate synonym for thinking among the options provided. Sensation refers to the process of detecting and encoding sensory information from the environment. Learning involves acquiring new knowledge or skills through experience or instruction. Organization refers to the arrangement or structuring of elements in a systematic manner.

4. d) All of these are arguments by critics.
Explanation: Critics of ape language research have raised various concerns regarding the validity and interpretation of the findings. These criticisms include:
a) Ape language is merely imitation of the trainer's behavior: Critics argue that apes may simply be mimicking the behaviors demonstrated by their human trainers without truly comprehending the linguistic aspects of communication.
b) There is little evidence that apes can equal even a 3-year-old's ability to order words with proper syntax: Critics contend that while apes may demonstrate some level of language use, their linguistic abilities do not match those of human children, particularly concerning syntax and grammar.
c) By seeing what they wish to see, trainers attribute greater linguistic ability to apes than actually exists: Critics suggest that trainers may unintentionally project higher linguistic abilities onto apes, leading to an overestimation of their language skills.

5. c) propositions.
Explanation: Propositions are statements that express relationships between concepts. They combine concepts in a way that conveys meaning, describing the relationships among these concepts. For instance, in the proposition "The cat is on the mat," the concepts "cat" and "mat" are connected by the relationship "is on." Propositions are fundamental to cognitive processes as they help in organizing thoughts, understanding sentences, and forming meaningful connections between different pieces of information.

6. d) have led to the general conclusion that they can use language symbolically but have only the slightest capacity for grammar.
Explanation: Research into the language abilities of common chimpanzees has shown that they can use language symbolically to some extent, such as understanding and using symbols or lexigrams to communicate basic needs and ideas. However, their capacity for understanding and applying grammatical rules is very limited.
Symbolic usage: Chimpanzees have been taught to use symbols or sign language to represent objects, actions, and desires. This indicates a basic level of symbolic communication, demonstrating that they can associate symbols with specific meanings.
Grammar: Despite their ability to use symbols, chimpanzees struggle with the complexities of grammar. They show only rudimentary understanding of grammatical structures and are not able to consistently produce or comprehend syntactically correct sentences in the way humans do.

7. c) language, images, and concepts.

Explanation: The three building blocks of thought are fundamental elements that contribute to our ability to think, reason, and understand the world around us. These are:
Language: This is the primary medium through which humans communicate and express their thoughts. Language consists of a system of symbols and rules (grammar) that allow us to generate an infinite number of sentences and convey complex ideas.
Images: Mental images are visual representations in the mind that are not present to the senses. They allow us to visualize objects, scenarios, and concepts without any immediate sensory input. Mental imagery is essential for spatial reasoning, planning, and recalling past experiences.
Concepts: Concepts are mental categories that group objects, events, or ideas that share common properties. They help us organize and simplify information, making it easier to understand and communicate about the world. Concepts are crucial for categorization, generalization, and reasoning.

8. d) our language shapes our thinking.
Explanation: Whorf's linguistic determinism hypothesis, also known as the Sapir-Whorf hypothesis, posits that the structure of a language affects its speakers' cognition and worldview. This theory suggests that people who speak different languages will perceive and think about the world differently because their languages structure their experiences in different ways. Linguistic determinism is the stronger version of the hypothesis, suggesting that language constrains thought and that linguistic categories limit and determine cognitive categories. For example, if a language has no future tense, its speakers might perceive and plan for the future differently than speakers of languages that do have a future tense.

9. b) units of meaning made up of concepts.
Explanation: In cognitive psychology, propositions are considered the smallest units of meaning that can be true or false. They represent relationships between concepts and can be thought of as statements or assertions about the world. A proposition links concepts to express a specific idea or piece of knowledge. For instance, the proposition "The cat is on the mat" links the concepts of "cat" and "mat" with the relational concept of "being on." This proposition can be evaluated as true or false depending on whether the cat is actually on the mat.

10. b) children have a set of innate learning aids that specifically help them to acquire language.
Explanation: Noam Chomsky, a prominent linguist, proposed the theory of an innate

language acquisition device (LAD) that is pre-wired in the human brain, which he believes is crucial for language acquisition. According to Chomsky, all humans are born with an inherent ability to learn language, a concept he referred to as "universal grammar." This theory posits that children are equipped with a set of grammatical principles and rules that are common to all languages, allowing them to acquire language rapidly and effectively, regardless of the specific language they are exposed to. Chomsky's theory argues against the notion that language learning is purely a product of general intelligence or simple imitation and reinforcement (behaviorist theories). Instead, he emphasizes that the complexities of language structure and the speed with which children learn language cannot be adequately explained by environmental factors alone.

11. d) phonemes
Explanation: Phonemes are the smallest units of sound in a language that can distinguish one word from another. In English, phonemes include individual sounds like "th," "ch," and "ph." These sounds do not have meaning by themselves but serve as the building blocks for words. For example, the phoneme "th" is found in words like "this" and "that," "ch" in "chat" and "chop," and "ph" in "phone" and "phantom." Phonemes are about sounds, morphemes about meaning units, semantics about meaning, and syntax about sentence structure. Understanding these distinctions is fundamental in the study of linguistics and language acquisition. Phonemes are particularly crucial as they are the basic sounds from which spoken language is constructed.

12. c) Humans have a biological predisposition to acquire language.
Explanation: Noam Chomsky's view of language development is best summarized by the concept that humans have a biological predisposition to acquire language. This perspective is rooted in his theory of Universal Grammar, which suggests that the ability to learn language is hard-wired into the brain. According to Chomsky, this innate ability means that children are born with an inherent understanding of the basic principles of language structure, which allows them to quickly and efficiently learn the specific languages they are exposed to.

13. c) processes that are outside awareness but affect behavior.
Explanation: Nonconscious processes operate below the level of conscious awareness and can influence behaviors, thoughts, and emotions without an individual's deliberate intent or awareness. These processes are integral to everyday functioning, allowing for efficient and automatic responses to environmental stimuli. Examples include subliminal perception, automatic skills (like driving a familiar route without actively thinking about

each action), and implicit biases. Such processes enable the brain to handle complex tasks without overloading conscious thought, highlighting their critical role in both adaptive behavior and cognitive efficiency.

14. d) grammar
Explanation: Grammar encompasses the rules governing the structure and formation of sentences in a language, including syntax (the arrangement of words to form meaningful sentences), morphology (the structure of words and the formation of morphemes), and phonology (the organization of sounds). While semantics (the study of meaning in language) plays a crucial role in communication, it specifically focuses on the interpretation of words and sentences rather than their structural organization. Morphemes are the smallest units of meaning in a language, and while they contribute to grammar, they do not encompass the entirety of language structure and formation.

15. d) intuition.
Explanation: Intuition refers to thoughts and feelings that arise automatically, effortlessly, and immediately, often without conscious reasoning or deliberation. It's a form of implicit knowledge or instinctive understanding that guides decision-making and problem-solving. While intuition can be valuable in providing quick insights and solutions, it's important to recognize its limitations and potential biases. Mental set refers to a tendency to approach problems in a predetermined way based on past experiences or habits. Confirmation bias is the tendency to search for, interpret, or remember information in a way that confirms one's preconceptions or hypotheses. Heuristics are mental shortcuts or rules of thumb used to make decisions or solve problems quickly, but they can also lead to biases and errors in judgment.

16. a) deductive reasoning.
Explanation: Deductive reasoning is a logical process in which conclusions are drawn from general principles or premises. In the given example, the premise is "All cats have fur," and from this general statement, the conclusion is drawn that "This animal is a cat. Therefore, it has fur." Deductive reasoning moves from the general to the specific, and if the premises are true and the logic is valid, the conclusion must also be true. This contrasts with inductive reasoning, which involves drawing general conclusions from specific observations or evidence. Dialectical reasoning involves examining and resolving contradictions or opposing viewpoints, while divergent thinking involves generating creative ideas by exploring multiple possible solutions.

17. d) are fuzzy and overlap with one another.
Explanation: Most concepts used in thinking are not sharply defined but rather have fuzzy boundaries and overlap with one another. This characteristic is known as “fuzziness” or “fuzzy boundaries” in conceptual thinking. Concepts often vary in their application and interpretation depending on context and individual perspectives, leading to a degree of ambiguity and variability. This fuzziness allows for flexibility in thinking and the ability to adapt concepts to different situations. It also reflects the complexity and interconnectedness of concepts in the human mind, as they often cannot be neatly categorized or separated from one another.

18. d) playing chess using a defensive strategy that has often been successful for you.
Explanation: Heuristics are mental shortcuts or rules of thumb that simplify problem-solving and decision-making processes. Illustrates the use of heuristics because it involves using a familiar and successful strategy without necessarily considering all possible moves or analyzing the situation exhaustively. This approach relies on past experiences or patterns of success to guide current behavior, which is characteristic of heuristic reasoning.

19. d) incorporates all of the above.
Explanation: Inductive reasoning is a form of reasoning that involves drawing general conclusions from specific observations or evidence. Therefore:
a) Inductive reasoning is used when the premises provide support for the conclusion, but the conclusion still could be false.
b) Inductive reasoning is indeed often used in scientific thinking. Scientific investigations often involve collecting data, making observations, and then drawing general conclusions or hypotheses based on those observations.
c) Inductive reasoning allows for a specific conclusion in the sense that it leads to a generalization or hypothesis based on specific instances or evidence.

20. b) prototype
Explanation: A prototype is a cognitive representation of a category that includes the most typical and characteristic features of that category. It serves as a mental model that people use to quickly categorize and identify new objects and concepts by comparing them to this standard representation. In psychology, prototypes are considered the best examples or a “typical member” of a category that people have in their minds, which they use to judge other members of the same category. For instance, when you think of a bird, you might imagine a robin or a sparrow small, able to fly, and with feathers because these are common characteristics most people associate with the category “bird.” This doesn’t mean

that all birds fit this prototype; for example, penguins and ostriches are also birds but don't match the typical prototype due to their inability to fly.

21. d) never become as fluent as those who learned to sign at a younger age.
Explanation: Research indicates that early exposure to language is crucial for the development of proficient language skills. Deaf children who are not exposed to sign language until their teenage years may learn basic words and syntax, but they often do not achieve the same level of fluency as those exposed to sign language from a younger age. This is because the critical period for language acquisition, which is a peak time for absorbing language complexities, typically occurs during early childhood. During this critical period, the brain is highly plastic, meaning it can adapt and learn languages more efficiently. Late exposure to sign language can result in less proficiency, particularly in the use of complex grammatical structures and nuances of the language.

22. a) informal reasoning.
Explanation: Informal reasoning is used when information is incomplete or when there are many competing viewpoints. This type of reasoning involves evaluating evidence, arguments, and claims in everyday situations where formal logical structures may not apply. It is flexible and adaptable, allowing individuals to make judgments and decisions based on the available information, even when it is uncertain or conflicting. Informal reasoning often incorporates elements of both inductive and deductive reasoning but is not confined to strict logical rules, making it suitable for complex and ambiguous situations.

23. c) an idealized cognitive model
Explanation: An idealized cognitive model refers to our mental representation of events as we expect or predict them to be, based on our experiences and cultural background. These models are not exact replicas of the world but rather simplified versions that highlight certain features while omitting others. They help us make sense of our experiences by providing a framework through which we interpret and predict events. For example, when planning a wedding, people often have an idealized cognitive model of how the event should unfold, influenced by cultural norms, personal desires, and societal expectations. This model guides their planning and decision-making process, even though the actual event may differ from this idealized version.

24. c) an interaction between biology and experience.
Explanation: Language acquisition is a complex process that involves both innate biological mechanisms and experiential factors. It is not solely the result of conditioning and

reinforcement, as was once proposed by behaviorist theories. Nor is it purely a biological process of maturation that unfolds in isolation from environmental input. Instead, language acquisition is best understood as an interaction between an individual's biological predispositions and their linguistic experiences. From a biological perspective, humans are equipped with a brain that is prewired to recognize and learn language patterns. This capacity for language is a unique human trait that develops as part of our neurological growth. However, this biological potential needs to be activated by exposure to language through experience. Children learn to speak by interacting with others and engaging with their environment, which shapes their linguistic abilities.

25. c) the understanding that some judgments are more valid than others.
Explanation: According to Kitchener and King, quasi-reflective judgment is a stage of cognitive development where individuals recognize that knowledge is uncertain and that some judgments are more valid than others based on the quality of the evidence and the reasoning behind them. This stage moves beyond the assumption that there is always a single correct answer (which is characteristic of earlier stages of cognitive development) and involves a more nuanced understanding of the complexity and variability of knowledge. Quasi-reflective thinkers understand that while absolute certainty may be unattainable, some conclusions are more justified or better supported by evidence than others.

26. a) they develop conceptual blocks resulting from overly rigid assumptions.
Explanation: Many people struggle with problems like the "pieces of chain" or the "six matches" because they form conceptual blocks. These blocks are mental barriers that prevent individuals from correctly solving problems. They often stem from overly rigid assumptions about how things should work or how a problem should be approached. For example, in the "six matches" problem, if a person assumes that matches can only be used as straight lines and not as angles or intersections, they may fail to find the solution. This type of fixed mindset limits creativity and the ability to see all possible solutions.

27. a) are quickly able to recognize syllable sequences that appear repeatedly.
Explanation: Research studies have shown that human infants have a remarkable ability to learn the statistical aspects of speech. Specifically, they are adept at recognizing patterns and sequences in speech, such as syllables that frequently occur together. This ability allows them to discern word boundaries and is a crucial part of language acquisition. While infants also respond to changes in pitch and other aspects of speech, the specific ability highlighted in the research is their recognition of repeating syllable sequences, which is a key component of their statistical learning capabilities.

28. c) Concept formation
Explanation: Concept formation is the cognitive process that involves organizing information in the environment into categories or classes of objects or events. This process helps individuals understand and navigate the world by grouping similar items together based on shared characteristics, allowing for more efficient processing, retrieval, and application of knowledge. Concepts help in recognizing new instances of objects or events and are fundamental to language, thought, and learning. Hypothesis testing (option a) involves making and testing predictions, problem-solving (option b) involves finding solutions to specific issues, and decision-making (option d) involves choosing between alternatives.

29. d) Formal reasoning
Explanation: Formal reasoning is the ability to evaluate arguments for logical consistency and validity. It involves the application of established rules and principles of logic to assess whether conclusions follow logically from premises. This type of reasoning is widely applicable in various domains, including political decision-making, scientific research, and everyday problem-solving, where it is crucial to critically analyze and construct sound arguments. Formal reasoning ensures that conclusions are not only based on factual accuracy but also on coherent and logically structured arguments.

30. b) Natural concepts are based on prototypes, while logical concepts rely on clear rules.
Explanation: Natural concepts are typically based on prototypes, which are mental representations of the most typical or common examples within a category. These concepts often have fuzzy boundaries and are influenced by personal experiences and cultural factors. In contrast, logical concepts are defined by clear rules or criteria, and membership in these categories is determined by whether an object or idea meets these specific criteria. Logical concepts are more precise and less influenced by individual variation compared to natural concepts.

31. c) Logical concept
Explanation: Logical concepts are defined by rules or criteria specifying the features that determine an object's inclusion in the concept. In the given example, the rule specifies that objects must be both large and black to belong to the concept. Logical concepts are characterized by clear and precise definitions, and membership in these categories is determined by whether an object or idea meets the specified criteria. This contrasts with natural concepts, which are often based on prototypes and have fuzzy boundaries, as well as vague concepts, which lack precise definitions or clear criteria for inclusion.

32. c) (A) is true, but (R) is false.
Explanation: Assertion (A) is True: Functional fixedness is a cognitive bias that limits individuals' ability to see familiar objects in new ways and hinders creative problem-solving. Even for simple problems, people might struggle to find alternative uses for an object if they're fixated on its traditional function.

Reason (R) is False: While functional fixedness can certainly affect problem-solving, it's not limited to complex problems. It can occur even with relatively simple tasks. For instance, someone struggling to open a box with a can opener due to being fixated on its usual function exemplifies this bias.

33. a) Utility and probability
Explanation: Utility refers to the perceived value or usefulness that individuals assign to different options or choices when making decisions. Probability involves assessing the likelihood or chance of various outcomes occurring as a result of each choice. These two aspects, utility and probability, are fundamental considerations in decision-making processes. They help individuals evaluate options and anticipate the potential outcomes of their decisions.

34. b) Representativeness
Explanation: In the experiment with the description of Steve to predict his occupation, participants likely utilized the representativeness heuristic. This heuristic involves making judgments or predictions based on how closely an individual or situation resembles a prototype or stereotype. When presented with Steve's description, participants likely compared it to their mental image of someone in a particular occupation and made their prediction based on the perceived match. The representativeness heuristic is a cognitive shortcut that can lead to quick decisions but may also result in biases, as it relies on stereotypes and may overlook individual differences or alternative explanations.

35. d) Semanticity, generativity, and displacement.
Explanation: Semanticity refers to the ability of language to convey meaning. Words and symbols in a language represent objects, actions, ideas, and qualities in the real and abstract world.
Generativity is the capacity of language to produce an infinite number of sentences and ideas using a finite set of rules and words.
Displacement allows language users to talk about things that are not present in the immediate physical environment, including past and future events or imaginary concepts.

36. a) To distinguish between acceptable and unacceptable words.
Explanation: Phonemes are the smallest units of sound in a language that can change the meaning of a word. They serve to differentiate one word from another. For example, the difference in the phoneme /b/ in “bat” and /p/ in “pat” changes the meaning of the word. Without the distinction between phonemes, communication would be significantly impaired, as words would sound the same, leading to ambiguity and misunderstanding. While phonemes can convey emotional or affective meaning (option b) in speech through variations in tone or intonation, their primary function remains the distinction between words. Phonemes do not determine word order in sentences (option c) or create variations in sentence structure (option d); these aspects of language are governed by syntax.

37. d) (A) is false, but (R) is true.
Explanation: Assertion (A) states that “Heuristics are guaranteed to provide a correct solution to a problem,” which is false. Heuristics are cognitive shortcuts or rules of thumb used in problem-solving, but they do not guarantee a correct solution. They can lead to efficient problem-solving in many cases, but they can also result in errors or biases.

Reason (R) states that “Heuristics are often based on past experiences and serve as shortcuts in the problem-solving process,” which is true. Heuristics are indeed often based on past experiences, intuition, or common sense, and they serve as mental shortcuts that help individuals make decisions or solve problems more quickly and efficiently.

38. c) The social uses of language and contextual meaning.
Explanation: Pragmatics deals with how context influences the interpretation of language beyond its literal meanings. It examines how speakers convey meaning through implications, presuppositions, and social conventions. This includes understanding conversational implicatures, speech acts, and the role of context in interpreting utterances. Essentially, pragmatics delves into how language is used in real-life situations to achieve communicative goals within social and cultural contexts. It goes beyond the mere words spoken and delves into the intentions, implications, and social dynamics involved in communication.

39. d) Because they are not based on meaning.
Explanation: Syntactic rules govern the arrangement of words and phrases to create meaningful sentences in a language. However, these rules are considered arbitrary because they are not inherently tied to the meaning of the words or the concepts they represent. Instead, they are based on conventions established within a particular language

community. These rules can vary significantly among different languages and dialects, making them subjective and dependent on cultural and linguistic context. Therefore, syntactic rules are considered arbitrary because they are not inherently dictated by the meaning of the words but rather by the structure and conventions of the language itself.

40. a) Both (A) and (R) are true and (R) is the correct explanation of (A).
Explanation: Assertion (A) is true: Language is indeed considered innate to humans, and they are biologically predisposed to acquire language rapidly.

Reason (R) is true: Noam Chomsky, a prominent linguist, proposed the theory of Universal Grammar, suggesting that humans are born with an innate language acquisition device that enables them to rapidly learn and understand language without formal instruction. Chomsky's argument supports the assertion that language acquisition is innate. Therefore, (R) provides a correct explanation for (A).

41. b) By the age of 2
Explanation: Around the age of 2, children typically begin to combine words into primitive sentences, marking the onset of what is known as the telegraphic stage of language development. During this stage, children start to produce two-word utterances that convey basic meaning, such as "mommy eat" or "big dog." This stage is an important milestone in language development, indicating progress in syntactic and semantic understanding.

42. b) Objects with a dynamic quality.
Explanation: Children's first words often refer to objects with a dynamic quality, such as "ball," "dog," "car," or "mama." These are concrete nouns representing tangible objects or familiar people that children frequently encounter and interact with in their immediate environment. These objects are dynamic, engaging, and directly relevant to the child's everyday activities and sensory experiences. This relevance and frequent exposure make these words easier for children to learn and use as they start to communicate. Abstract concepts, geometric shapes, and numbers are generally too complex and less immediately relevant to a young child's daily experiences, thus appearing later in their language development.

43. (a) Producing sentences with subjects and predicates
Explanation:
Between the ages of 2 and 3, children typically reach several significant linguistic milestones. One of these milestones is the ability to produce sentences that include both

subjects and predicates. This marks a transition from using simple two-word phrases to forming more complex sentences that adhere to basic grammatical structures. At this stage, children's language development becomes more sophisticated, and they start to communicate more effectively by combining words to express complete thoughts. While expanding vocabulary rapidly is also an important milestone during this period, producing sentences with subjects and predicates is a more defining feature of linguistic development between the ages of 2 and 3.

44. a) Natural concepts.
Explanation: The concept of "prototypes" is primarily associated with natural concepts. In cognitive psychology, prototypes are considered the most typical or representative examples of a category within natural concepts. For instance, when people think of the category "bird," a robin is often thought of as a prototype because it possesses many of the attributes commonly associated with birds, such as feathers, the ability to fly, and a typical bird shape. This prototype serves as a cognitive reference point, making it easier for individuals to categorize and recognize new instances by comparing them to the prototypical example. Prototypes facilitate the organization and retrieval of information in our minds by providing clear examples of natural concepts.

45. d) Conjunctive rule
Explanation: In concept formation, a conjunctive rule is applied when we define a concept based on the requirement that two or more features must appear together for an item to be categorized as part of that concept. This means all specified attributes are necessary conditions for classifying an object. For instance, to classify an object as a "mammal," it must possess both characteristics of giving birth to live offspring and having mammary glands for nursing. The conjunctive rule establishes a strict criterion, requiring the simultaneous presence of multiple defining features for categorization. This contrasts with other rules such as disjunctive, prototypical, or hypothetical rules, which operate based on different principles of concept formation.

46. c) Logical concept
Explanation: Logical concepts are defined by rules specifying the features that determine their inclusion. These rules are typically precise and deterministic, specifying exactly what conditions must be met for an object to be considered a member of the concept. For example, the concept of a "triangle" in geometry is defined by a logical rule specifying that it must have three straight sides and three angles that sum up to 180 degrees. This contrasts with natural concepts, which are based on typical or prototypical examples,

and fuzzy concepts, which have unclear boundaries and may not have precise definitions. Prototype concepts are based on typical examples within a category, rather than strict rules.

47. b) Hypothesis testing
Explanation: Hypothesis testing is central to concept acquisition, particularly when testing and evaluating alternative explanations of a phenomenon. In this process, individuals generate hypotheses or potential explanations based on available information or prior knowledge. They then systematically test these hypotheses through observation, experimentation, or logical deduction to determine their validity. Through hypothesis testing, individuals refine their understanding of concepts by accepting, rejecting, or modifying hypotheses based on empirical evidence or logical reasoning. This iterative process is fundamental to scientific inquiry and learning in various domains, allowing individuals to develop accurate mental representations of concepts.

48. c) Drawing 4 straight lines extending outside the square.
Explanation: The nine-dot problem is a classic exercise in creative problem-solving and lateral thinking. The problem consists of nine dots arranged in a 3x3 grid. The challenge is to connect all nine dots using only four straight lines without lifting the pen from the paper and without retracing any line. Many people find the problem difficult because they unconsciously impose constraints on themselves, such as the assumption that the lines must stay within the boundary of the 3x3 grid. To solve the problem, you must "think outside the box" and extend the lines beyond the perceived boundaries of the grid.

49. a) Both (A) and (R) are true and (R) is the correct explanation of (A).
Explanation: Assertion (A) is true: Utility and probability are indeed two factors that influence decision making. Utility refers to the subjective value or satisfaction derived from choices, while probability relates to the likelihood of different outcomes occurring.

Reason (R) is true: Utility represents the value assigned to choices, indicating the preferences or desirability of different options. Probability, on the other hand, assesses the likelihood of these choices leading to specific outcomes, providing information crucial for decision making. Therefore, (R) correctly explains how utility and probability are related to decision making, supporting assertion (A).

50. c) They involve stages and feedback loops.
Explanation: Complex problems are characterized by their multifaceted nature, often involving multiple interconnected components, variables, and dependencies. They typically

cannot be solved with a single, straightforward solution but instead require a systematic approach that involves breaking down the problem into stages, considering feedback loops, and iterating through potential solutions. Complex problems often necessitate a structured problem-solving process that incorporates analysis, planning, implementation, and evaluation across various stages. This approach allows for adaptation and refinement based on feedback received throughout the problem-solving process.

51. a) Functional fixedness
Explanation: Functional fixedness refers to the cognitive bias that limits a person to use an object only in the way it is traditionally used, due to their previous experiences with the object. It inhibits individuals from considering alternative uses or functions of the object, even when those alternative uses could help solve a problem or achieve a goal. This phenomenon can hinder creativity and problem-solving by restricting the range of possible solutions that individuals consider.

52. c) To outperform human decision-making
Explanation: Expert systems in AI are designed to replicate the decision-making capabilities of human experts in specific domains or fields. The aim is not merely to simulate human intelligence but to surpass it in terms of efficiency, accuracy, and consistency. By encoding the knowledge and reasoning strategies of domain experts into computer programs, expert systems can analyze complex problems, provide recommendations, and make decisions at a level that may exceed human capabilities. These systems are particularly valuable in domains where expertise is scarce, or where consistent decision-making is essential, such as medicine, finance, and engineering. Therefore, the primary goal of developing expert programs in AI is to outperform human decision-making, rather than merely replicating or assisting it.

53. c) Algorithm
Explanation: Algorithms are step-by-step procedures or systematic methods for solving problems that guarantee a solution if followed correctly. They involve considering all possible solutions within a defined set of rules or constraints. While algorithms can be time-consuming, they are reliable and exhaustive, ensuring that every possible solution is explored. This approach contrasts with heuristics, which are quicker but may not guarantee an optimal solution, and insight, which involves sudden realization or understanding of a problem without conscious effort. Expert systems, on the other hand, are computer programs designed to mimic the decision-making abilities of human experts in specific domains.

54. d) (A) is false, but (R) is true.
Explanation: Assertion (A) is false: Heuristics do not necessarily provide precise and accurate answers to complex questions. Instead, heuristics are mental shortcuts that simplify decision-making processes. They help people make quick and efficient judgments and decisions but do not guarantee accuracy or precision. Heuristics are useful in reducing the cognitive load and effort required to solve problems, but they can sometimes lead to biases and errors.

Reason (R) is true: Heuristics are indeed rules of thumb or mental shortcuts that people use to make decisions. These strategies allow individuals to process information quickly and efficiently, often relying on experience, intuition, and common sense rather than detailed analysis. Heuristics are especially useful in situations where time is limited, and quick decisions are necessary, but they do not always lead to optimal solutions.

55. b) Atmosphere effect
Explanation: The atmosphere effect is a type of error in syllogistic reasoning that occurs due to the structure and wording of the syllogism. This cognitive bias affects how individuals interpret the premises and conclusions of a syllogism based on the "atmosphere" created by the logical terms used. This error arises when the mood or tone set by the premises of a syllogism influences the perceived validity of the conclusion. For instance, if both premises of a syllogism are positive, people are more likely to accept a positive conclusion, and if both premises are negative, they are more likely to accept a negative conclusion, regardless of whether the conclusion logically follows from the premises.

56. b) They believed the proportions were irrelevant to the person's occupation.
Explanation: The subjects likely assumed that the personality profile would be determined solely by the occupation itself, rather than considering the proportions of each occupation within the population. This belief led them to disregard the known proportions of lawyers to engineers, as they perceived this information as unrelated to the task of assessing the individual's personality profile based on their occupation. Therefore, the subjects ignored the proportions because they believed them to be irrelevant to the person's occupation.

57. c) The color preferences of the decision-maker
Explanation: Color preferences, while they may influence certain aspects of perception or mood, are not typically considered primary factors in decision making, especially in contexts where utility, probability, and emotional impact play more significant roles.

Factors such as the utility of choices (their usefulness or value), the probability of each choice's realization (likelihood of outcomes), and the emotional impact of the decision (how it affects the individual's feelings) are commonly recognized as key determinants in decision-making processes across various domains.

58. d) It consists of a large number of simple interconnected units with weighted connections.
Explanation: Connectionist machines, also known as neural networks or parallel distributed processing systems, are composed of numerous simple processing units, often referred to as neurons, that are interconnected with weighted connections. These networks are inspired by the structure and function of the human brain, where information is processed in parallel across interconnected neurons. The weighted connections determine the strength or influence of signals between units, allowing the network to learn and adapt through a process of adjusting these weights based on input-output patterns. This parallel and distributed nature distinguishes connectionist machines from systems that perform serial operations on strings of symbols or rely on a central executive for information flow.

59. c) They indicate the machine's response to its input.
Explanation: Output units in a connectionist machine are responsible for representing the machine's response to its input. Once the input has been processed through the interconnected layers of the network, the activation patterns in the output units represent the machine's output or response to the input. These patterns may correspond to specific categories, classifications, or values, depending on the task the machine is designed to perform. Therefore, output units play a crucial role in conveying the processed information or decision made by the connectionist machine based on its input.

60. d) Perception, action, and thought are affected.
Explanation: The strengths of connections between units in a connectionist machine determine the flow of information and influence the processing and representation of input data. By altering these connection strengths, the overall functioning of the network is modified, which can affect its ability to perceive, process, and respond to stimuli. Changes in connection strengths can lead to alterations in the network's internal representations, which in turn impact perception, action, and thought processes carried out by the machine. Therefore, modifying connection strengths has a direct effect on the cognitive capabilities and behaviors of the connectionist machine.

61. c) Connectionist models operate through parallel processing.

Explanation: Connectionist models, also known as neural networks or parallel distributed processing systems, process information in a distributed and parallel manner across interconnected units. This parallel processing allows for the simultaneous computation of multiple inputs and enables the network to capture complex patterns and relationships in the data. In contrast, traditional serial processing models typically operate sequentially, one step at a time, on symbolic representations of information. While connectionist models do not rely on a central executive for information flow, and they may or may not use symbols to process information, the key distinction lies in their utilization of parallel processing for computation.

62. b) It uses teacher feedback to adjust connection weights.
Explanation: Backpropagation is a supervised learning algorithm commonly used in training neural networks, which are a type of connectionist machine. In backpropagation, the network's output is compared to the desired or "target" output, and the error between the two is calculated. This error signal is then propagated backward through the network, layer by layer, to adjust the connection weights in such a way as to minimize the error. The "teacher" refers to the mechanism providing the desired outputs during the training process. By iteratively adjusting the connection weights based on this feedback, the network learns to produce more accurate outputs for a given set of inputs.

63. c) It refers to the ability to organize information into categories or classes.
Explanation: Concept formation involves the mental process of categorizing or classifying information based on shared characteristics or attributes. Individuals organize their experiences, perceptions, and knowledge into coherent mental representations known as concepts. These concepts allow for efficient storage, retrieval, and understanding of information by grouping related elements together. Therefore, concept formation is primarily concerned with the organization of information into categories or classes, rather than problem-solving techniques, connecting dots, or the decision-making process.

64. c) Concepts help categorize and organize the environment.
Explanation: Concepts play a crucial role in cognitive processes by allowing individuals to categorize and organize information about the environment. By grouping similar objects, events, or experiences into categories based on shared characteristics, concepts facilitate efficient processing, storage, and retrieval of information. Concepts enable individuals to make sense of the world around them, identify patterns, draw comparisons, and make predictions. They provide a framework for understanding complex phenomena and guide decision-making and problem-solving processes. Therefore, concepts serve to categorize

and organize the environment, rather than leading to sensory perception, causing information overload, or disrupting structured thinking.

65. c) They use a “win-stay, lose-shift” strategy.
Explanation: In relatively simple situations, individuals often adopt a “win-stay, lose-shift” strategy for hypothesis testing. This strategy involves sticking with a hypothesis (i.e., “staying”) if it appears to be successful or supported by evidence (“win”), while being open to changing or abandoning the hypothesis (“shifting”) if it proves unsuccessful or contradicted by evidence (“lose”). This adaptive approach allows individuals to test hypotheses incrementally, adjusting their beliefs based on the outcomes of their observations or experiments. It promotes efficiency by focusing attention on promising hypotheses while remaining flexible enough to consider alternative explanations when necessary.

66. a) Identifying the breed of a dog based on its appearance.
Explanation: When identifying the breed of a dog based on its appearance, individuals may form hypotheses about the dog’s breed by comparing its physical characteristics to those of known dog breeds. They might hypothesize that the dog belongs to a specific breed based on features such as size, coat color, fur texture, ear shape, and other distinctive traits associated with certain breeds. They then test these hypotheses by observing additional characteristics or consulting external sources, such as breed standards or experts’ opinions, to confirm or revise their initial hypotheses. This process exemplifies concept acquisition through hypothesis testing, as individuals systematically evaluate and refine their understanding of the concept (in this case, dog breeds) based on empirical observations and logical reasoning.

67. c) By using prototypes as reference points to determine whether stimuli belong to the concept.
Explanation: Rosch proposed the Prototype Theory of categorization, which suggests that people categorize objects by comparing them to prototypical or typical examples within a category. According to this theory, individuals form a mental representation of a concept based on a prototype a central, idealized example that embodies the most typical features of the category. When encountering new stimuli, individuals assess their similarity to the prototype to determine whether they belong to the concept. This process allows for flexible categorization, as objects that share more characteristics with the prototype are considered more typical members of the category.

68. d) It states that an object must have either one or more of the features to belong to the concept.
Explanation: A disjunctive rule specifies that an object can belong to the concept if it has either one or more of the defining features. In other words, possessing any of the specified features is sufficient for an object to be categorized within the concept. This contrasts with conjunctive rules, which require all specified features to be present for categorization, and with disjunctive rules, which allow for flexibility in membership by considering multiple possible features. Disjunctive rules broaden the scope of categorization by accommodating objects that may vary in their specific characteristics while still belonging to the same concept.

69. c) Formulating a complex problem.
Explanation: Newell and Simon proposed a problem-solving process consisting of several stages, which include understanding and representing the problem, looking for a rule or hypothesis, testing the rule or hypothesis, evaluating a hypothesis, and revising and retesting if necessary. "Formulating a complex problem" is not one of the stages proposed by Newell and Simon. Instead, problem solving typically begins with understanding the problem and breaking it down into smaller, more manageable segments, rather than formulating a complex problem.

70. b) Swinging the string with scissors to grasp both strings and tie them together.
Explanation: In Maier's work on functional fixedness, participants were presented with a problem where they had two strings hanging from the ceiling and were asked to tie them together. The solution involved swinging one of the strings with scissors so that it could reach the other string, allowing the participant to grasp both strings together and tie them. This solution demonstrates overcoming functional fixedness by using an object (scissors) in an unconventional way to solve the problem.

71. b) Analyzing the similarities between computer programs and human problem-solving strategies.
Explanation: Psychologists interested in artificial intelligence often study the ways in which computer programs simulate or replicate human cognitive processes, such as problem-solving, decision-making, and learning. They seek to understand the similarities and differences between computer programs and human problem-solving strategies, aiming to develop more effective and efficient artificial intelligence systems. This involves examining how computer programs process information, represent knowledge, and execute tasks, as well as comparing these processes to those observed in human cognition.

72. c) Achieving ideal outcomes or answers, often exceeding human capabilities.
Explanation: Expert programs are designed to mimic the decision-making abilities of human experts in specific domains or fields. Their primary objective is to achieve optimal or near-optimal outcomes, often surpassing human capabilities in terms of efficiency, accuracy, and consistency. By encoding the knowledge and reasoning strategies of domain experts into computer programs, expert systems can analyze complex problems, provide recommendations, and make decisions at a level that may exceed human expertise.

73. c) Subgoal analysis
Explanation: Subgoal analysis is a problem-solving strategy that involves breaking down a complex problem into a series of smaller, more manageable subproblems or subgoals. By identifying and addressing each subgoal individually, the overall problem becomes easier to solve. This approach allows for systematic progress, as solving each subgoal contributes to solving the larger problem. Subgoal analysis is particularly effective in tackling complex issues, as it provides a clear structure and direction for problem-solving efforts, reducing the cognitive load and making the process more manageable and efficient.

74. c) The skill to use a finite number of words and rules to produce a wide variety of sentences
Explanation: Generativity refers to the capacity of human language to generate an infinite number of sentences and ideas from a finite set of words and grammatical rules. This feature allows speakers to create and understand new and unique sentences that they have never heard before. It highlights the creative and flexible nature of language, enabling effective communication of complex and diverse thoughts, ideas, and information.

75. a) (iii), (ii), (i), (iv) and (v)
Explanation: These stages are as follows:
Orientation: This initial stage involves identifying the problem or challenge and understanding its context and requirements.
Preparation: In this stage, individuals gather relevant information, conduct research, and accumulate knowledge related to the problem.
Incubation: During incubation, individuals take a break from active problem-solving, allowing their subconscious mind to process the information and explore different possibilities.
Illumination: Also known as the “aha” moment, this stage is when a sudden insight or creative solution emerges, often unexpectedly.
Verification: The final stage involves evaluating, testing, and refining the creative idea or solution to ensure it is viable and effective.

76. d) Geneiativity
Explanation: The three major components of a spoken language are:
a) Phonology: This is the study of the sound system of a language, including the rules for combining and using phonemes (the smallest units of sound).
b) Syntax: This involves the rules and principles for constructing sentences in a language, including the arrangement of words and phrases to create well-formed sentences.
c) Semantics: This is the study of meaning in language, focusing on how words, phrases, and sentences convey meaning.
Generativity (which seems to be misspelled as "Geneiativity") is a concept related to the creative and productive nature of language, but it is not considered one of the major structural components of a spoken language.

77. b) 3-4 months
Explanation: Around 3 to 4 months of age, infants enter the stage of canonical babbling, where they produce repetitive consonant-vowel combinations like "ba-ba" or "ma-ma." This stage represents an important milestone in language development, as it signifies the beginning of vocal exploration and experimentation with speech-like sounds. Babbling provides infants with opportunities to practice controlling their vocal muscles and experimenting with different sounds, laying the foundation for later language acquisition.

78. b) Moving or changing objects
Explanation: Children's early vocabulary often includes words that refer to objects or entities that are dynamic or in motion. This is because dynamic objects tend to attract their attention more readily than static objects. For example, they may say words like "car," "ball," or "dog" before naming static objects like "table" or "chair." Dynamic objects provide more opportunities for engagement and interaction, making them more salient and memorable to young children as they begin to build their vocabulary.

79. b) Innate disposition to learn language.
Explanation: Children have an innate predisposition to learn language, which drives the rapid development of language during their early years. From birth, infants are primed to attend to language stimuli in their environment, such as speech sounds and patterns. They are biologically equipped with the cognitive abilities necessary for language acquisition, such as pattern recognition, auditory discrimination, and imitation. Through exposure to language input from caregivers and interaction with their environment, children naturally acquire language skills at a remarkable pace. While formal language training, peer interactions, and exposure to electronic devices may play a role in language development,

they are not the primary reason for the rapid acquisition of language during early childhood.

80. a) Operant conditioning
Explanation: Operant conditioning involves shaping behavior through reinforcement and punishment. In the case of teaching Washoe the American Sign Language (ASL), Allen and Beatrice Gardner utilized operant conditioning techniques by rewarding Washoe with food or praise when she correctly produced signs in ASL. Through repeated reinforcement, Washoe learned to associate certain signs with specific meanings and contexts, gradually expanding her vocabulary and language skills. This approach allowed Washoe to acquire language in a manner similar to how children learn their native language, demonstrating the potential for non-human primates to learn and use complex communication systems.

81. c) Lana
Explanation: Lana, a female chimpanzee, was known as the first "computer" chimp. She learned to use a geometric symbol keyboard connected to a computer to communicate and form sentences. Lana was part of a research project conducted by Duane Rumbaugh and Sue Savage-Rumbaugh at the Yerkes National Primate Research Center in the 1970s. Through this keyboard, Lana was able to select symbols representing words and arrange them into meaningful sequences, demonstrating a remarkable ability to communicate using a symbolic language interface. This pioneering research shed light on the cognitive abilities of non-human primates and their potential for language acquisition and communication.

82. d) "Water bird"
Explanation: When Washoe saw a swan for the first time, she made the innovative sign combination "water bird." This sign combination reflects Washoe's ability to create novel and descriptive expressions by combining signs she had previously learned. By combining the signs for "water" and "bird," Washoe effectively conveyed the concept of a bird associated with water, demonstrating her understanding of the relationship between the swan and its habitat. This example highlights Washoe's remarkable linguistic abilities and her capacity for abstract thought and communication through American Sign Language.
83. c) To group stimuli into categories, providing structure and predictability.

Explanation: Concepts play a crucial role in human cognition by allowing individuals to organize and make sense of the world around them. By grouping stimuli into categories based on shared characteristics or attributes, concepts provide structure and predictability to our perception and understanding of the environment. This categorization process helps simplify complex information, facilitate memory and learning, and guide behavior and

decision-making. Concepts enable individuals to recognize patterns, generalize knowledge across different contexts, and efficiently navigate their surroundings.

84. b) To assume that we would have been better at predicting actual events than is really true.
Explanation: The hindsight effect, also known as the "I-knew-it-all-along phenomenon," refers to the tendency for individuals to perceive events as having been more predictable after they have occurred than they actually were before they happened. It involves the belief that one would have been better at predicting the outcome of an event than they actually were. This bias can lead individuals to overestimate their ability to foresee events and underestimate the uncertainty and unpredictability of outcomes.

85. d) To refine their hypothesis and arrive at a solution.
Explanation: Revisiting the stages of problem-solving allows individuals to refine their understanding of the problem, generate new insights, test alternative hypotheses, and evaluate potential solutions. By cycling through the stages iteratively, individuals can deepen their understanding, incorporate new information, and adjust their approach as needed to overcome obstacles and reach a satisfactory solution. This iterative process of refinement is essential for tackling complex problems effectively and arriving at optimal solutions.

86. c) A rigid way of approaching a problem based on past experiences.
Explanation: A mental set is a tendency to approach problem-solving situations in a fixed or inflexible manner, often relying on strategies that have been successful in the past. This can lead individuals to overlook alternative solutions or fail to adapt their approach to suit the requirements of a new problem. Mental sets can hinder creativity and innovation in problem-solving by restricting the exploration of novel strategies or perspectives.

87. c) (A) is true, but (R) is false.
Explanation: Assertion (A) is true because computer programs designed to simulate human problem-solving often do exhibit similarities in steps and memory usage compared to human problem-solving strategies. However, Reason (R) is false because humans do not rely solely on long-term memory for problem-solving; they also use working memory and other cognitive processes. Computer programs can utilize different types of memory and strategies that do not align exactly with human memory usage.

88. c) A short-cut or rule of thumb based on past problem-solving experience.

Explanation: A heuristic is a mental shortcut that allows people to solve problems and make judgments quickly and efficiently. These rule-of-thumb strategies shorten decision-making time and allow people to function without constantly stopping to think about their next course of action. Heuristics are helpful in many situations because they reduce the cognitive burden during decision-making and can be quite accurate. However, they can also lead to cognitive biases and errors because they are not foolproof methods for arriving at a correct solution. Heuristics contrast with algorithms, which are step-by-step procedures that guarantee a correct solution but are often more time-consuming and complex. Subgoal analysis and hierarchical organization of subgoals are strategies that involve breaking down a problem into smaller, more manageable parts, which is different from the more intuitive and less structured nature of heuristics.

89. a) A step-by-step procedure in which the problem solver considers all possible solutions.
Explanation: An algorithm is a systematic, step-by-step procedure that guarantees a correct solution to a problem if followed correctly. Unlike heuristics, which are shortcuts or rules of thumb, algorithms are exhaustive and consider all possible solutions to a problem. Algorithms are commonly used in computer science and mathematics, where precision and accuracy are essential.

90. c) Valid syllogism
Explanation: This syllogism follows the form of a valid categorical syllogism, adhering to the rules of deductive reasoning. It consists of two premises ("All men are mortal" and "Sanjeev is a man") followed by a conclusion ("Therefore, Sanjeev is mortal"). The conclusion logically follows from the premises, adhering to the principle that if the premises are true, then the conclusion must also be true. Thus, it is categorized as a valid syllogism, demonstrating a sound logical structure.

91. a) The tendency to agree with a conclusion even if it is false due to the mood of the syllogism.
Explanation: The atmosphere effect in syllogistic reasoning occurs when the logical form or "mood" of the premises influences individuals to accept a conclusion regardless of its actual logical validity. This effect arises because the premises create an "atmosphere" or expectation about what kind of conclusion is likely to follow, leading people to accept conclusions that match this expectation.
For instance, if both premises are affirmative, people are more likely to accept an affirmative conclusion, even if it does not logically follow from the premises. Therefore,

the atmosphere effect demonstrates how the linguistic and logical "mood" of premises can bias individuals' acceptance of conclusions, highlighting the importance of critical evaluation in logical reasoning.

92. c) Representativeness heuristic
Explanation: The representativeness heuristic involves evaluating the probability of an event or the likelihood of an individual belonging to a certain category based on how closely they match a prototype or stereotype of that category. When people judge someone's, occupation based on personality traits, they compare the traits to their mental image or stereotype of various occupations. If the traits closely match their stereotype of a particular occupation, they are more likely to conclude that the individual belongs to that occupation. For example, if a person is described as meticulous and detail-oriented, people might judge that the person is more likely to be an accountant because these traits fit the common stereotype of that profession.

93. c) Connectionist models simulate cognitive processes inspired by the brain.
Explanation: Connectionist models, also known as neural networks, are computational models that simulate cognitive processes by mimicking the way the brain's neural networks function. They consist of interconnected units (neurons) that process information collectively, similar to the brain's neural structure. These models are inspired by the brain's architecture and functionality, but they are not exact replicas. They abstract and simplify the complex neural processes to create manageable and computationally feasible models. Unlike symbolic processing, which relies on explicit rules and representations, connectionist models use distributed processing and learn through adjusting the strengths of connections (weights) between units based on experience or training.

94. b) Cognitive processes are independent of the machinery.
Explanation: Garnham (1991) discusses the traditional AI approach, which posits that cognitive processes can be understood and modeled independently of the specific physical machinery (whether it be the human brain or a computer) that underlies them. This view suggests that cognition can be represented as a series of abstract processes or algorithms that do not rely on the physical characteristics of the machinery executing them. This approach contrasts with connectionist models, which are more closely inspired by the structure and functioning of the brain's neural networks.

95. c) They increase the capabilities of the connectionist machine.
Explanation: Hidden units in a connectionist machine, also known as an artificial neural

network, play a crucial role in determining the machine's ability to process and model complex information. These units are located between the input and output layers and are not directly observable from the outside. They enable the network to learn and represent abstract concepts by transforming the input into a representation that the output layer can use to perform a task. The presence of hidden units allows the network to create and modify internal representations of the input data, which is essential for tasks such as pattern recognition, classification, and function approximation. By adjusting the weights of the connections between units during the learning process, the network can capture subtle patterns and relationships within the data that are not immediately apparent.

96. c) Connections to nearly correct outputs are strengthened, while others may be unchanged or weakened.
Explanation: In connectionist models, such as neural networks, learning occurs through a process known as backpropagation, which involves adjusting the strengths (weights) of connections between neurons based on the network's performance on training data. When presented with an input pattern, the network processes the information through its layers of interconnected units and generates an output pattern. After generating an output, the network compares it to the desired or target output (provided by a teacher or through labeled training data). If the output is incorrect or deviates from the target, the network calculates the error and propagates it backward through the network, adjusting the weights of connections in a way that reduces the error.

97. c) Memory is a set of relationships between various aspects encoded in patterns of units.
Explanation: In PDP models, memory is distributed across the network's interconnected units rather than being localized in a specific location such as a central executive. Memory is represented as the pattern of activation and the strength of connections between units in the network. Information is stored in the network's connections in the form of distributed representations, where various aspects of memory are encoded as patterns of activation across units. Memory retrieval involves activating the appropriate patterns of units in response to a cue, which then propagates through the network, activating related patterns and retrieving associated information. This distributed and associative nature of memory in PDP models allows for parallel processing and the ability to recognize patterns and retrieve information based on similarity to stored representations.

98. c) They comprise thousands of interconnected units with altered connection strengths.
Explanation: Connectionist machines, also known as neural networks, consist of

interconnected units (neurons) arranged in layers, with each unit connected to many others. These connections have associated weights that determine the strength of influence one unit has on another. Learning in connectionist machines involves adjusting these connection weights based on experience or training data, allowing the network to adapt and develop internal representations of patterns in the data. In contrast, traditional symbolic computation relies on explicit rules and representations of symbols, where operations are typically performed in a serial manner following predefined algorithms.

99. d) Both A and B
Explanation: Prosodic cues in speech refer to variations in pitch, rhythm, stress, and intonation that convey information beyond the literal meaning of words. They help the listener to understand what the speaker is saying by providing cues about emphasis, emotion, sentence structure, and speaker intentions. Prosodic cues are more frequently used in naturally occurring speech, where speakers naturally vary their pitch, rhythm, and intonation to convey meaning and express emotions.

100. c) Inspiration or illumination.
Explanation: During the inspiration or illumination stage of creative thinking, the thinker often experiences a sudden appearance of the solution to their problem. This stage is marked by a moment of insight or revelation where the solution seems to emerge unexpectedly, often after a period of incubation or subconscious processing. It's characterized by a feeling of clarity and understanding, as the individual gains new perspectives or connections that lead to the resolution of the problem. This stage is crucial in the creative process as it represents the breakthrough moment that propels the thinker towards the finalization and implementation of their creative idea.

101. b) Convergent thinking.
Explanation: Convergent thinking involves reaching a solution through a series of steps or rules, often following a specific algorithm. This approach focuses on finding a single correct answer or solution to a problem by systematically applying logical reasoning or predefined procedures. It is commonly associated with tasks that have clear problem definitions and well-defined criteria for success. In contrast, divergent thinking involves generating multiple solutions or ideas by exploring different perspectives and possibilities, often without strict adherence to established rules or procedures. Creative thinking encompasses both convergent and divergent thinking, as well as other approaches that emphasize novelty, originality, and flexibility in problem-solving.

Answer Key

102. d) Perceptual constancy.
Explanation: Perceptual constancy refers to the tendency to perceive an object as a whole, rather than as the sum of its individual parts. This concept is central to Gestalt psychology, which emphasizes the organization and structure of perceptual experiences. According to Gestalt principles, our perception is guided by principles such as similarity, proximity, and closure, which lead us to perceive wholes or patterns even when presented with fragmented or incomplete information. Perceptual constancy allows us to recognize objects consistently across different viewing conditions, such as changes in lighting, distance, or angle, by maintaining a stable and coherent perception of their essential characteristics.

103. a) Dunning-Kruger effect.
Explanation: The Dunning-Kruger effect is the cognitive bias where people tend to overestimate their own ability and performance relative to others. This bias arises from a lack of self-awareness or metacognition, leading individuals to have an inflated sense of competence in areas where they may lack expertise or skill. In essence, those who are incompetent are often unaware of their incompetence and thus erroneously believe they are more competent than they truly are. This effect was first described by psychologists David Dunning and Justin Kruger in their seminal study, which found that individuals with lower ability tend to overestimate their performance, while those with higher ability may underestimate theirs.