

## Consciousness and Cognition

1. The prefix 'pre-' in the word 'premedical' is a
  - A. phoneme
  - B. morpheme
  - C. syntactic unit
  - D. chereme
  
2. Noam Chomsky differed from B.F. Skinner in posulating that language acquisition occurs primarily by means of
  - A. associative learning
  - B. cognitive social learning
  - C. a hard-wired process
  - D. imitation
  
3. Miriam learns that Lynne's cousin, Jordan, a nurse whom Miriam has never met, will be at a party they are planning to attend. When Miriam meets Jordan later that evening, she is surprised that Jordan is a man. This is an illustration of
  - A. representativeness heuristic
  - B. confirmation bias
  - C. availability heuristic
  - D. overconfidence effect
  
4. Which of the following is holophrastic speech typical of a two year old?
  - A. "Up!"
  - B. "I dranked it all!"
  - C. "Yummy tumtum!"
  - D. "The faucet goes dwip dwip"
  
5. In the normal sleep cycle a person alternates between NREM sleep and
  - A. stage 1
  - B. stage 2
  - C. stage 3
  - D. paradoxical sleep
  
6. Slow wave sleep is another name for
  - A. stage 1
  - B. stage 2
  - C. stage 3
  - D. stages 1-3
  
7. The length of a normal sleep cycle is
  - A. 30 minutes
  - B. 90 minutes
  - C. 4 hours
  - D. 6 hours
  
8. Which statements below accurately describe night terrors?
  - I. They tend to happen during periods of arousal from delta sleep.
  - II. They are not a kind of dream.
  - III. They often occur in tandem with sleep paralysis.
  - IV. They result from disrupted REM sleep.
  - A. I only
  - B. I and II
  - C. I, II and III
  - D. III and IV

9. Tom Missenshot, a basketball player is listening to his coach give instructions during a tight game. He clearly hears someone within the crowd say to his neighbor, 'Tom Missenshot? What a bum!' This is an example of
- A. cognitive inhibition
  - B. stimulus filtering
  - C. cocktail party effect
  - D. crossmodal attention
10. During REM sleep, the release of the CNS neurotransmitters norepinephrine, serotonin and histamine is
- A. completely suppressed
  - B. reduced
  - C. maintained at constant levels
  - D. increased
11. Along with K-complexes, sleep spindles are defining characteristics of, and indicate the onset of
- A. stage 1 sleep
  - B. stage 2 sleep
  - C. stage 3 sleep
  - D. REM sleep
12. Marcus believes that the control room of a submarine contains physical periscopes, control panels, viewing screens and an assortment of crew including pilot and sonarmen. The construct manifesting this belief is a(n)
- A. script
  - B. frame
  - C. schema
  - D. archetype
13. An assessment test composed entirely of non-verbal logic puzzles and mathematical problems may still be culturally biased due to
- A. socio-economic bias
  - B. gender bias
  - C. stereotype threat
  - D. perceptual set
14. After seeing many news stories of home foreclosures, a person may overestimate the likelihood of winding up in foreclosure if they buy a house. This is an example of
- A. base-rate fallacy
  - B. representativeness heuristic
  - C. gambler's fallacy
  - D. availability heuristic
15. After meeting four polite cosplayers at Comic-Con, Daryl concludes that cosplayers must be a courteous group. Daryl drew this conclusion based on what kind of reasoning?
- A. inductive reasoning
  - B. deductive reasoning
  - C. syllogistic reasoning
  - D. analogical reasoning

16. Jane has been working hard to gain acceptance into a prestigious law school. Of the following, which is most likely regarding Jane's predictions regarding her emotional state if she doesn't succeed?

- I. She is likely to underestimate how negatively she will feel.
- II. She will likely underestimate her ability to cope.
- III. She is likely to overestimate how negatively she will feel.
- IV. She will likely overestimate her ability to cope.

- A. I and II
- B. I and IV
- C. II and III
- D. III and IV

17. According to which cognitive model is a robin more representative of birds than a penguin?

- A. prototype theory
- B. classical taxonomy
- C. representativeness heuristic
- D. structuralism

18. In the past, when data indicated a decline in sales for a particular product line, Rudolph had recommended increasing advertising and discounting prices. This time, though, the problem was not direct competition from equivalent products. The product line was being technologically superseded. The more profitable course would have been to stop advertising and increase prices to maximize revenue from the existing customer base while the revenue lasted. His inclination to attempt to solve the problem using what had worked before is an example of which concept?

- A. confirmation bias
- B. functional fixedness
- C. mental set
- D. groupthink

19. Going out to dinner with her family, Marjorie understands the purpose of the tables, menus, food, and money at the restaurant, as well as the roles of the servers, chefs, and cashier. She expects a sequence of events to occur involving entering the restaurant, ordering, eating, paying and then exiting. This sequence of expected behaviors can be described as a

- A. prototype
- B. mental set
- C. schema
- D. script

20. When Ornithal first met Bella, he imagined that she must be a school teacher because she liked children, had a no-nonsense attitude, and drove a practical car. His idea about her profession is best described as being arrived at by means of a

- A. representativeness heuristic
- B. availability heuristic
- C. schema
- D. mental set

21. As a method of problem solving, trial and error is a(n)

- A. algorithm
- B. heuristic
- C. mental set
- D. rule of thumb

22. Consider the following proposition:

The grass became wet numerous times when it rained, therefore: the grass always gets wet when it rains.

What type of reasoning is being employed?

- A. inductive
- B. deductive
- C. by analogy
- D. rule of thumb

23. A toddler looks up at his dad from the stroller and says ‘Want juice!’”. This is an example of which kind of speech?

- A. holophrastic
- B. telegraphic
- C. babbling
- D. over-regularization

24. Human beings can talk about things that aren’t present. We can even talk about things that don’t actually exist. What property of language does this reflect?

- A. prevarication
- B. generativity
- C. displacement
- D. arbitrariness

25. The most pervasive deficit in aphasias is

- A. apraxia
- B. alexia
- C. dysgraphia
- D. anomia

26. When August Kekulé realized that the structure of benzene was a closed ring, he was half-asleep in front of a fire. He saw molecules forming into snakes, one of which grabbed its tail in its mouth. The term for this state of consciousness is

- A. hypnagogia
- B. dissociative
- C. NREM sleep
- D. ideasthesia

27. In a single episode of *McGyver*, our hero 1) used a knife on a string to hook a towel, 2) constructed a flame thrower from a hose and a pipe, 3) constructed an arc welder from a jumper cable and two half dollars, and 4) melted a garden hose spread on a net to make an ant-repellent suit. Which obstacle to problem solving does McGyver consistently overcome?

- A. focalism
- B. fundamental attribution error
- C. neglect of probability
- D. functional fixedness

28. The sentence “Mary had a little lamb” may mean something different if Mary is walking to school with her lamb following behind or if Mary is actually sitting at a table in a restaurant having lambchops for dinner. This difference is best described as a matter of

- A. pragmatics
- B. syntax
- C. morphology
- D. semiotics

29. A group of police officers have breathalyzers displaying false drunkenness in 5% of the cases in which the driver is sober. However, the breathalyzers never fail to detect a truly drunk person. Suppose the police officers stop a driver at random, and force the driver to take a breathalyzer test. It indicates that the driver is drunk. If the police officer thinks there is a 95% chance the driver actually is drunk, their invalid reasoning can likely be ascribed to the following fallacy:

- A. appeal to probability
- B. conjunction fallacy
- C. base-rate fallacy
- D. prosecutor's fallacy

30. What is the name of the neural structure described below?

With projections to the thalamus and cerebral cortex that allow it to exert some control over which sensory signals reach the cerebrum and come to our conscious attention, this structure plays a central role in states of consciousness like alertness and sleep.

- A. basal ganglia
- B. pons
- C. hypothalamus
- D. reticular formation

31. On the EEG, the transition to stage 1 sleep is characterized by a decrease in alpha wave patterns and an increase in

- A. alpha waves
- B. beta waves
- C. delta waves
- D. theta waves

32. In which stage of sleep do night terrors, nocturnal enuresis, sleep walking, and somniloquy occur?

- A. stage 1
- B. stage 2
- C. stage 3
- D. REM

33. Complete the analogy. Cataplexy is to narcolepsy as active motor behavior is to \_\_\_\_\_

- A. REM sleep behavior disorder
- B. Night terrors
- C. Sleep paralysis
- D. NREM parasomnia

34. A specific variant of the human leukocyte antigen (HLA) complex in combination with a specific genetic mutation in the T-cell receptor alpha locus causes the immune system to attack and kill orexin producing neurons. Hence

- A. sensitized phagocytic microglia will down-regulate serotonin production.
- B. over expression of IL-1 leads to excessive tau phosphorylation.
- C. narcolepsy may result from an auto-immune disorder with a genetic component.
- D. neurons of the substantia nigra become dysfunctional and eventually die.

35. Which drug or class of drugs below is not a GABA<sub>A</sub> receptor positive allosteric modulator?

- A. ethanol
- B. valium
- C. secobarbital
- D. morphine

36. Complete the analogy. Substantia nigra is to dorsal striatum as \_\_\_\_\_ is to nucleus accumbens.

- A. ventral tegmental area
- B. hypothalamus
- C. ventral striatum
- D. olfactory bulb

37.  $\Delta$ FosB overexpression and accumulation of phosphorylated  $\Delta$ FosB within neurons of the nucleus accumbens has been identified as playing a central, crucial role in the development and maintenance of pathological behavior and neural plasticity involved in both behavioral addictions and drug addictions.

$\Delta$ FosB is a

- A. dopamine receptor agonist
- B. tyrosine kinase
- C. truncated product of the *fosB* gene
- D. NMDA receptor co-agonist

38. Which of the following is better characterized as a bottom-up process?

- A. endogenous attention
- B. attentional control
- C. executive attention
- D. stimulus-driven attention

39. The substituted amphetamine, MDMA, is among which class of psychoactive drugs?

- A. stimulants
- B. hallucinogens
- C. narcotics
- D. entactogens

40. Barber, Spanos, and Chaves (1974) proposed a nonstate “cognitive-behavioural” theory of hypnosis, arguing that responses to hypnotic suggestions were mediated by a “positive cognitive set” consisting of positive expectations, attitudes, and motivation. Barber et al. noted that similar factors appeared to mediate the response both to hypnotism and to cognitive behavioural therapy, in particular, systematic desensitization. In other words

- A. The hypnotic state is distinguished by a diminished emotional responsiveness.
- B. The factors underlying hypnotic suggestibility resemble those underlying successful therapeutic treatment for phobias.
- C. The hypnotist’s object is to increase the receptability of specific messages much like the cognitive-behavioral therapist.
- D. Subjects of hypnosis and desensitization therapy patients are both attempting to fulfill socially constructed roles.

41. Which stage of sleep is depicted in the EEG pattern below?



- A. stage 1
- B. stage 2
- C. stage 3
- D. REM

42. Axons from the optic tract carry the information to reset diurnal rhythms each day to the
- A. lateral geniculate nucleus of the thalamus
  - B. superior colliculus of the midbrain
  - C. pretectum of the midbrain
  - D. suprachiasmatic nucleus of the hypothalamus
43. Concentrating on a math problem, which type of brain waves will appear on your electroencephalogram?
- A. delta waves
  - B. beta waves
  - C. alpha waves
  - D. theta waves
44. Internal activation of the brain in REM sleep is associated with the inhibition of both external sensory input and motor output. Control of this input-output gate occurs by means of reciprocal inhibitory interactions between monoaminergic and cholinergic neurons of the
- A. hypothalamus
  - B. reticular formation
  - C. medulla
  - D. pons
45. Chomsky's theory of generative grammar models the knowledge that underlies the human ability to speak and understand. One of the most important of Chomsky's ideas is that most of this knowledge is
- A. socially constructed
  - B. subconscious
  - C. innate
  - D. behaviorally conditioned
46. A child watching a nature program sees a pack of hyenas prowling near a herd of zebras on the Serengeti and says 'Look at those dogs!' She is reasoning based on
- A. a mental set
  - B. the availability heuristic
  - C. a prototype model
  - D. the representativeness heuristic
47. An auto mechanic, whenever confronted with the problem of a car that loses electrical power while driving, persists in always replacing the alternator as the first step even though recommended protocols suggest prior diagnostic tests. The mechanic has
- A. belief perseverance
  - B. functional fixedness
  - C. a mental set
  - D. confirmation bias

48. All biological life forms that we know of depend on liquid water to exist. Therefore, if we discover a new biological life form it will probably depend on liquid water to exist. This conclusion is an example of \_\_\_\_\_.
- A. inductive reasoning
  - B. deductive reasoning
  - C. an algorithm
  - D. formal logic
49. In a German language declarative sentence, the finite verb always stands in the second position, while other elements can be moved around to indicate emphases in meaning. Which aspect of German language does this rule govern?
- A. prosody
  - B. grammar
  - C. syntax
  - D. morphology
50. An experiment was conducted in which speakers of two languages that categorize colors differently (English and Zuni) were asked to recognize colors. It was found that Zuni speakers who classify green and blue together as a single color did have trouble recognizing and remembering nuances within the green/blue category. The results of this experiment would seem to suggest that
- A. The structure of anyone's native language strongly influences or fully determines the worldview he will acquire as he learns the language.
  - B. Language and its structures limit and determine human knowledge or thought
  - C. Linguistic and non-linguistic events must be separately observed and described before they can be correlated.
  - D. The structure of a language affects its speakers' cognition.



## Answer Key

### Consciousness and Cognition

- 1. B**—A morpheme is the smallest grammatical unit in a language. In other words, it is the smallest meaningful unit of a language.
- 2. C**—Chomsky labeled whatever innate capacity the human has for language acquisition the language acquisition device (LAD). It is a hypothetical module of the human mind posited to account for children's innate predisposition for language acquisition. This is an example of the nativist theory of language. This theory asserts that humans are born with the instinct or "innate facility" for acquiring language.
- 3. A**—A representativeness heuristic is a cognitive bias in which an individual categorizes a situation based on a pattern of previous experiences or beliefs about the scenario. While representativeness heuristics can be useful, they can also be limiting.
- 4. A**—Holophrasis is the prelinguistic use of a single word to express a complex idea.
- 5. D**—Non-rapid eye movement sleep, or NREM, is, collectively, sleep stages 1–3, previously known as stages 1–4. Rapid eye movement sleep (REM sleep, REMS), characterized by random movement of the eyes, low muscle tone throughout the body, and the propensity of the sleeper to dream vividly, is also known as paradoxical sleep because of physiological similarities to waking states, including rapid, low-voltage desynchronized brain waves.
- 6. C**—Slow-wave sleep (SWS), often referred to as deep sleep, consists of stage three of non-rapid eye movement sleep. There is not a clear distinction between stages three and four. Stage three has 20-50 percent delta activity, whereas stage four has more than 50 percent. As of 2008, the American Academy of Sleep Medicine (AASM) has discontinued the use of stage four, such that the previous stages three and four now are combined as stage three.
- 7. B**—A typical sleep cycle is approximately 90 minutes in duration. The whole period normally proceeds in the order: N1 → N2 → N3 → N2 → REM.
- 8. B**—A night terror typically occurs with arousal from delta sleep (slow wave, N3). A night terror is not a dream. It is not a nightmare, in other words. Sleep paralysis, on the other hand, generally occurs in cases of interrupted REM sleep, where the muscles are paralyzed to prevent acting out dream content.
- 9. C**—The cocktail party effect is the phenomenon of being able to focus one's auditory attention on a particular stimulus while filtering out a range of other stimuli, much the same way that a partygoer can focus on a single conversation in a noisy room. The term may also be used to describe a similar phenomenon that occurs when one may immediately detect words of importance originating from unattended stimuli, for instance hearing one's name in another conversation.
- 10. A**—REM sleep is regulated by the pons region of the brainstem. Acetylcholine neurotransmitters activate this part of the brainstem. Inhibitory signals are sent from the pons to the spinal cord to bring about muscle paralysis. The release of neurotransmitters norepinephrine, serotonin and histamine is completely shut down.
- 11. B**—A K-complex is an electroencephalography (EEG) waveform that occurs during stage 2 of NREM sleep. It is the largest event in healthy human EEG. They are more frequent in the first sleep cycles. K-complexes have two proposed functions: first, suppressing cortical arousal in response to stimuli that the sleeping brain evaluates not to signal danger, and second, aiding sleep-based memory consolidation. A sleep spindle is a burst of oscillatory brain activity

visible on an EEG that also occurs during stage 2 sleep.

12. **C**—A schema describes a pattern of thought or behavior that organizes categories of information and the relationships among them.
13. **C**—Stereotype threat is a situational predicament in which people are or feel themselves to be at risk of conforming to stereotypes about their social group. Since its introduction into the academic literature, stereotype threat has become one of the most widely studied topics in the field of social psychology. Stereotype threat has been shown to reduce the performance of individuals who belong to negatively stereotyped groups. If negative stereotypes are present regarding a specific group, group members are likely to become anxious about their performance, which may hinder their ability to perform at their maximum level.
14. **D**—The availability heuristic is a mental shortcut that relies on immediate examples that come to a given person's mind when evaluating a specific topic, concept, method or decision. The availability heuristic operates on the notion that if something can be recalled, it must be important, or at least more important than alternative solutions which are not as readily recalled. Subsequently, under the availability heuristic, people tend to heavily weigh their judgments toward more recent information, making new opinions biased toward that latest news.
15. **A**—Inductive reasoning involves starting from specifics to derive a general rule.
16. **C**—Research findings in the field of affective forecasting allow us to deduce that Jane is likely to overestimate the negative emotional impact and underestimate her ability to cope. Affective forecasts tend to be colored by impact bias, the tendency to overestimate the emotional impact of a future event, whether in terms of intensity or duration. Our affective forecasts also tend to be colored by immune neglect, which refers to forecasters' unawareness of their tendency to adapt to and cope with negative events.
17. **A**—Prototype theory is a mode of graded categorization in cognitive science, where some members of a category are more central than others. Instead of a definition based model - e.g. a bird may be defined as elements with the features [+feathers], [+beak] and [+ability to fly], prototype theory would consider a category like bird as consisting of different elements which have unequal status - e.g. a robin is more prototypical of a bird than, say a penguin. This leads to a graded notion of categories, which is a central notion in many models of cognitive science and cognitive semantics.
18. **C**—Mental sets represent a form of rigidity in which an individual behaves or believes in a certain way due to prior experience.
19. **D**—Behavioral scripts are a sequence of expected behaviors for a given situation. Scripts include default standards for the actors, props, setting, and sequence of events that are expected to occur in a particular situation
20. **A**—When people rely on representativeness to make judgments, they are likely to judge wrongly because the fact that something is more representative does not actually make it more likely. The representativeness heuristic is simply described as assessing similarity of objects and organizing them based around the category prototype.
21. **B**—A heuristic is any approach to problem solving, learning, or discovery that employs a practical method not guaranteed to be optimal or perfect, but sufficient for the immediate goals. Trial and error is the most fundamental heuristic. An algorithm is different from a heuristic in that an algorithm will always produce a correct solution.
22. **A**—Inductive reasoning attempts to support a determination of the rule. It hypothesizes a

rule after numerous examples are taken to be a conclusion that follows from a precondition in terms of such a rule.

- 23 B**—Telegraphic speech, according to linguistics and psychology, is speech during the two-word stage of language acquisition in children, which is laconic and efficient.
- 24 C**—Displacement is the capability of language to communicate about things that are not immediately present (spatially or temporally); i.e., things that are either not here or are not here now.
- 25 D**—Anomia is a deficit of expressive language. It is the most pervasive deficit in the aphasias. Some level of anomia is seen in all of the aphasias.
- 26 A**—Hypnagogia is the experience of the transitional state from wakefulness to sleep: the hypnagogic state of consciousness, during the onset of sleep. Mental phenomena that occur during this “threshold consciousness” phase include lucid thought, lucid dreaming, hallucinations, and sleep paralysis.
- 27 D**—Functional fixedness is a cognitive bias that limits a person to using an object only in the way it is traditionally used.
- 28 A**—Pragmatics is a subfield of linguistics and semiotics that studies the ways in which context contributes to meaning. Pragmatics explains how language users are able to overcome apparent ambiguity, since meaning relies on the manner, place, time etc. of an utterance.
- 29 C**—This would be a common form of base-rate fallacy. The probability of a positive test result is determined not only by the accuracy of the test but by the characteristics of the sampled population. When the incidence, i.e. the proportion of those who have a given condition, is lower than the test’s false positive rate, even tests that have a very low chance of giving a false

positive in an individual case will give more false than true positives overall. In other words, if less than 5% of drivers are actually drunk, more false breathalyzer results will be obtained from random selection than true ones. Where false positive tests are more probable than true positive tests this is known as the false positive paradox.

- 30 D**—The reticular formation is a set of interconnected nuclei that are located throughout the brainstem. The reticular formation is not anatomically well defined because it includes neurons located in diverse parts of the brain. The neurons of the reticular formation all play a crucial role in maintaining behavioral arousal and consciousness.
- 31 D**—Theta waves tend to appear in meditative, drowsy and sleeping states (stage 1 and stage 2) but not the deepest stages of sleep where delta waves predominate.
- 32 C**—Night terrors, nocturnal enuresis, sleep walking, and somniloquy occur during stage 3 sleep.
- 33 A**—A classic symptom of narcolepsy, cataplexy is an episodic loss of muscle function, ranging from slight weakness such as limpness at the neck or knees to a complete body collapse. Cataplexy is generally considered to be unique to narcolepsy and is analogous to sleep paralysis in that the usually protective paralysis mechanism occurring during sleep is inappropriately activated. The opposite of this situation (failure to activate this protective paralysis) occurs in rapid eye movement behavior disorder. The major and arguably only abnormal feature of RBD is loss of muscle atonia (i.e., the loss of paralysis) during otherwise intact REM sleep (during which paralysis is not only normal but necessary). The loss of motor inhibition leads to a wide spectrum of behavioral release during sleep. This extends from simple limb twitches to more complex integrated movement, in which people appear to be unconsciously acting

out their dreams.

- 34 C**—Often those affected with narcolepsy have low levels of the neuropeptide orexin. Research suggests that this is often due to an autoimmune disorder. Choice ‘C’ has to do with Alzheimer’s disease and choice ‘D’ with Parkinson’s (The neurons of the substantia nigra are dopamine producing).
- 35 D**—Ethanol, benzodiazepenes (like valium), and barbiturates are GABA<sub>A</sub> receptor positive allosteric modulators (GABA<sub>A</sub> PAMs). GABA<sub>A</sub> receptor positive allosteric modulators increase the activity of the GABA<sub>A</sub> receptor protein. Unlike GABA<sub>A</sub> receptor agonists, GABA<sub>A</sub> PAMs do not bind at the same active site as the  $\gamma$ -Aminobutyric acid (GABA) neurotransmitter molecule: they affect the receptor by binding at a different site on the protein. In contrast, opioids act on opioid receptors. The endogenous opioids are dynorphins, enkephalins, endorphins, endomorphins and nociceptin.
- 36 A**—Dopaminergic pathways, sometimes called dopaminergic projections, are the sets of projection neurons in the brain that synthesize and release the neurotransmitter dopamine. Two of the most significant dopaminergic pathways are the nigrostriatal pathway and the mesolimbic pathway. The nigrostriatal pathway transmits dopamine from the substantia nigra to the caudate nucleus and putamen. The substantia nigra is located in the midbrain, while both the caudate nucleus and putamen are located in the dorsal striatum. The nigrostriatal pathway is important in motor function and reward learning. Disorder in the nigrostriatal pathway is implicated in Parkinson’s disease. The mesolimbic pathway transmits dopamine from the ventral tegmental area to the nucleus accumbens. The mesolimbic pathway is important for pleasure and positive reinforcement. Disorder in the mesolimbic pathway is implicated in addiction.
- 37 C**—This is a gene nomenclature question that is meant to also teach a bit about the molecu-

lar cell biology of the addiction process within neurons of the nucleus accumbens (The mesolimbic dopaminergic pathway transmits dopamine from the ventral tegmental area to the nucleus accumbens). The molecular hallmark of the addiction process is the accumulation of phosphorylated  $\Delta$ FosB within the nuclei of accumbal cells where it participates as a transcription factor (repressing *c-fos*). Regarding nomenclature, the question hinges on the meaning of the ‘ $\Delta$ ’ in the gene product signifier ‘ $\Delta$ FosB’. This symbol, ‘ $\Delta$ ’, under HGNC guidelines signifies ‘deletion’.  $\Delta$ FosB is a truncated splice variant of FosB. (Notice that when the gene itself is indicated in the nomenclature, the gene name is italicized and uncapitalized). You NEED to be comfortable with gene and gene product nomenclature for the new MCAT.

- 38 D**—Stimulus-driven attention is bottom-up processing, also known as exogenous attention. Exogenous attention is driven by the properties of the objects themselves. Some processes, such as motion or a sudden loud noise, can attract our attention in a pre-conscious, or non-volitional way. We attend to them whether we want to or not. Exogenous attention is thought to involve parietal and temporal cortices, as well as the brainstem. The second aspect is called top-down processing, also known as goal-driven, endogenous attention, attentional control or executive attention. This aspect of our attentional orienting is under the control of the person who is attending. It is mediated primarily by the frontal cortex and basal ganglia as one of the executive functions.
- 39 D**—Entactogens (or empathogens) are a class of psychoactive drugs that produce experiences of emotional communion, oneness, relatedness, emotional openness—that is, empathy or sympathy—as particularly observed and reported for experiences with 3,4-Methylenedioxymethamphetamine (MDMA).
- 40 B**—Systematic desensitization, also known as graduated exposure therapy is a type of behav-

ior therapy used in the field of psychology to help effectively overcome phobias and other anxiety disorders.

- 41 **B**—Because the EEG contains a sleep spindle and a K-complex, we know that this is stage 2 sleep.



- 42 **D**—The axons in the optic tract terminate in four nuclei within the brain: 1) the lateral geniculate nucleus of the thalamus - for visual perception, 2) the superior colliculus of the midbrain - for control of eye movements, 3) the pretectum of the midbrain - for control of the pupillary light reflex; and 4) the suprachiasmatic nucleus of the hypothalamus - for control of diurnal rhythms and hormonal changes.
- 43 **B**—Alpha brainwaves are dominant during quiet relaxation and in some meditative states. Beta brainwaves dominate when attention is directed towards difficult cognitive tasks and engaging stimuli in the outside world.
- 44 **D**—REM sleep begins with signals from the pons to the cerebral cortex which lead to EEG patterns similar to wakefulness as well as signals to the spinal cord, causing temporary paralysis of the limb muscles.
- 45 **C**—In Chomsky's view a baby possesses a large body of prior knowledge about the structure of language in general, and need only actually learn the idiosyncratic features of the language it is exposed to.
- 46 **C**—Prototype theory is a mode of graded categorization in cognitive science, where some members of a category are more central than others.

For example, when asked to give an example of the concept furniture, chair is more frequently cited than, say, stool. Prototype theory was a radical departure from traditional necessary and sufficient conditions as in Aristotelian logic. Thus instead of a definition based model - e.g. a bird may be defined as elements with the features [+feathers], [+beak] and [+ability to fly], prototype theory would consider a category like bird as consisting of different elements which have unequal status - e.g. a robin is more prototypical of a bird than, say a penguin. This leads to a graded notion of categories, which is a central notion in many models of cognitive science and cognitive semantics.

- 47 **C**—Mental sets represent a form of rigidity in which an individual behaves or believes in a certain way due to prior experience. In the field of psychology, mental sets are typically examined in the process of problem solving, with an emphasis on the process of breaking away from particular mental sets into formulation of insight.
- 48 **A**—Inductive reasoning is reasoning in which the premises are viewed as supplying strong evidence for the truth of the conclusion. It is the derivation of general principles from specific observations. While the conclusion of a deductive argument is certain, the truth of the conclusion of an inductive argument is probable, based upon the evidence given. In the specific example, we are inferring a future probability, the general proposition, from specific past instances. Unlike deductive arguments, inductive reasoning allows for the possibility that the conclusion is false, even if all of the premises are true.
- 49 **C**—In linguistics, syntax is the set of rules, principles, and processes that govern the structure of sentences in a given language, specifically word order.
- 50 **D**—The best answer in this question reflects the tenets of linguistic relativism. Choices 'A' and



'B' are too strong, verging on linguistic determinism. Choice 'C' reflects a criticism of the experimental methodology. Note that the degree to which language influences thought is not at all settled. Taking the universalist point of view, for example, Steven Pinker argues in *The Language Instinct* that thought is independent of language, that language is itself meaningless in any fundamental way to human thought, and that human beings do not even think in "natural" language.