1. In classical (Pavlovian) conditioning terminology, what does UCS stand for?
   a) unconscionable stimulus.
   b) unconditioned stimulus.
   c) unbelievable stimulus.
   d) unconditioned response.
   e) conditioned stimulus.

2. In humans, long-term memory is characterized by:
   a) high capacity and short duration, requiring attention.
   b) low capacity and short duration, requiring attention.
   c) low capacity and long duration, requiring consolidation.
   d) high capacity and long duration, requiring consolidation.
   e) low capacity and long duration, requiring attention.

3. During the arm movement that allows you to bring a hamburger to your mouth, which major muscle group
   is doing most of this work?
   a) the biceps extensors.
   b) the triceps extensors.
   c) the triceps flexors.
   d) the biceps flexors.
   e) the quadriceps extensors.

4. Dobermans and other breeds of dogs have provided important clues about narcolepsy in humans. Which brain region is likely associated with the loss of muscle tone (atonia) observed during REM sleep?
   a) the basal forebrain.
   b) the median raphe nucleus.
   c) the subcoerulear nucleus.
   d) the hippocampus.
   e) the gracile (gracilis) nucleus.

5. Johnny was involved in a car crash which severed part of his cervical spinal cord dorsally in the region of the dorsal column tracts. What would be your prognosis as to the likely loss of function produced by this accident?
   a) loss of motor control over his entire body (including neck and face).
   b) loss of motor control over his entire body (excluding neck and face).
   c) loss of sensory functions, excluding pain, below the neck.
   d) loss of motor control over lower body (legs).
   e) loss of all sensory functions, including pain, (and also including neck and face).
6. In a study of dream content by Calvin Hall and his colleagues (1982) on a sample of more than 10000 dreams, which category is most often reported?
   a) sexually explicit dreams.
   b) distant human memories dreams.
   c) happy dreams.
   d) childhood dreams.
   e) sadness, anxiety, and anger dreams.

7. Which of the following sleep phenomena is/are normally experienced mostly in children?
   a) sleepwalking.
   b) insomnia.
   c) sleep apnea.
   d) narcolepsy.
   e) delayed sleep/wake syndrome.

8. In the basal ganglia loop for movement control, the ________________ region receives axons from multiple cortical regions, which in turn send their axons to the internal region of the globus pallidus. The internal globus pallidus send their axons to the ________________ region.
   a) caudate/putamen; cortex.
   b) external globus pallidus; caudate/putamen.
   c) caudate/putamen; thalamus.
   d) thalamus; caudate/putamen.
   e) substantia nigra; cortex.

9. The chemical signals that help neurons to develop, form connections, and stay alive are called:
   a) progenitors.
   b) neurotrophic factors.
   c) somites.
   d) radial glia.
   e) blueprint mosaic.

10. Extrafusal muscle fibers:
    a) are a component of Golgi tendon organs.
    b) are contacted by alpha motor neurons.
    c) are contacted by gamma motor neurons.
    d) send signals through spindle apparatus neurons.
    e) are the same as intrafusal muscle fibers.

11. In a popular learning and memory task, rodents learn to swim to a platform that is barely submerged in a water-filled tank in order to escape from the cold water. This is an example of:
    a) habituation.
    b) classical conditioning.
    c) non-associative learning.
    d) instrumental conditioning.
    e) both c) and d).
12. What is the correct sequence of the different stages of sleep experienced through the night, beginning when you fall asleep (numbers are the different stages of non-REM sleep)?
   a) 1, 2, 3, 4, REM, 4, 3, 2, 1 . . .
   b) REM, 1, 2, 3, 4 . . .
   c) 1, 2, 3, 4, 3, 2, 1, REM . . .
   d) 4, 3, 2, 1, 2, 3, 4, REM . . .
   e) 4, 3, 2, 1, REM, 1, 2, 3, 4 . . .

13. As part of a science-fair project in 1965, how long did Randy Gardner stay awake during his sleep deprivation experiment?
   a) 24 days.
   b) 11 days.
   c) 5 days.
   d) 15 days.
   e) 2 days.

14. Which of the following is/are normal component(s) of slow-wave sleep?
   a) rapid eye movements.
   b) desynchronized EEG.
   c) PGO waves present.
   d) normal muscle tone.
   e) all the above.

15. What is the name of the phenomenon in which the sleeper controls and is aware of her/his dreams?
   a) lucid dreams.
   b) night terrors.
   c) nightmares.
   d) hallucinations.
   e) insomnia.

16. You just had an argument with your significant other and you slam the door on your way out. Which of your brain’s premotor areas would likely have been activated during performance of this action?
   a) cingulate motor area.
   b) supplementary motor area.
   c) premotor cortex.
   d) somatosensory cortex.
   e) basal ganglia.

17. Huntington’s disease (chorea) is a motor dysfunction produced by neuron cell loss (death) in which part of the brain?
   a) primary motor cortex.
   b) globus pallidus.
   c) caudate/putamen.
   d) substantia nigra.
   e) supplementary motor area.
18. Neuroplasticity takes several forms in the central nervous system. Which of the following mechanisms is/are NOT normal neuroplastic mechanisms?
   a) neurons get to contact different nerve cells.
   b) existing synapses are strengthened.
   c) neurons develop larger soma (cell bodies).
   d) a neuron starts making a new neurotransmitter.
   e) both c) and d).

19. What does the phenomenon of monocular deprivation, as studied in cats, tell us about the development of the nervous system?
   a) early experiences have no effects on nervous system functions.
   b) some nervous system plasticity (reorganization) only occur during critical developmental periods.
   c) the nervous system is similarly plastic throughout life.
   d) all of the above.
   e) both a) and b).

20. Why is it that pain from internal organs (heart, liver, etc.) is often felt as pain on a specific body surface (arm, back, etc.), the phenomenon known as referred pain?
   a) because the same peripheral pain sensory neuron go to an internal organ and body surface region.
   b) because the same neuron in the spinal cord receives painful information from organ and body surface region.
   c) because the same neuron in the thalamus receives painful information from different pain areas of the spinal cord.
   d) because the same neuron in the primary somatosensory cortex receives painful information from different pain areas of the thalamus.
   e) because pain sensation is simply very diffuse throughout the body.

21. Which part of the brain is responsible for controlling the force with which movements are exerted?
   a) parietal lobes.
   b) cerebellum.
   c) basal ganglia.
   d) occipical lobes.
   e) temporal lobes.

22. Which investigator(s) provided some of the first clues indicating that sleep was an active brain process?
   a) Bremer.
   b) Hebb.
   c) Stewart and Amir.
   d) Moruzzi and Magoun.
   e) Lashley.

23. In class we have discussed the acoustic startle reflex, and its reduction when the same startling stimulus (hand claps) is repeatedly presented. This is an example of:
   a) classical conditioning.
   b) instrumental conditioning.
   c) avoidance learning.
   d) habituation.
   e) sensitization.
24. We have discussed the organization of voluntary movements such that the right hemisphere of the brain controls the left side of the body, and vice-versa. Where does the corticospinal tract cross from its side of origin to the other side of the body?
   a) in the primary motor cortex.
   b) in the spinal cord.
   c) in the cerebellum.
   d) in the ventral medulla.
   e) in the thalamus.

25. True (a) or False (b). The legs are represented in the dorsal part of the motor homunculus.

26. True (a) or False (b). Enriched environments produce exactly similar physiological and behavioral benefits in developing (growing) and adult organisms.

27. Tricia began to suffer from involuntary tics and movements of her face, shoulders, neck, arms, and hands at an early age (7 years old). Given these specific characteristics, which disease would be most characteristic of Tricia’s symptoms?
   a) Tourette’s syndrome.
   b) Huntington’s disease.
   c) Parkinson’s disease.
   d) Hemibalismus.
   e) Bipolar disorder (manic-depression).

28. What is the name of the specialized receptors that are sensitive to stretch and that are located among your skeletal muscles?
   a) Meissner’s corpuscles.
   b) muscle spindles.
   c) free nerve endings.
   d) joint receptors.
   e) acetylcholine receptors.

29. Which of the following brain regions is/are likely responsible for desynchronization of the cortical EEG?
   a) subcoeruleus nucleus.
   b) the amygdala.
   c) the orbitofrontal cortex.
   d) the median raphe nucleus.
   e) both a) and b).

30. H. M., the patient described by Brenda Milner, became famous because:
   a) he was very intelligent.
   b) he suffered severe and relatively complete retrograde amnesia.
   c) he could not remember anything after his brain operation.
   d) had amnesia for both implicit and explicit types of memories.
   e) he suffered severe and relatively complete anterograde amnesia.
31. Donald Hebb was an influential biological psychologist who suggested that:
   a) all neocortical regions can equally store memories.
   b) consolidation of short- to long-term memories is produced via strengthening of synaptic connections.
   c) all memories are diffusely or widely stored all over neocortex.
   d) single neurons can represent complex memories.
   e) none of the above.

32. During a recent class, I clapped my hands loudly and made several of you jump; which motor tract do you think made you orient (turn your head) towards the source of that loud noise?
   a) corticorubral tract.
   b) corticospinal tract.
   c) dorsal column tract.
   d) reticulospinal tract.
   e) tectospinal tract.

33. Damage to which brain region involved in motor control would be more likely to produce tremors at rest (not action or movement initiated tremors)?
   a) putamen.
   b) caudate.
   c) globus pallidus internal.
   d) cerebellum.
   e) substantia nigra.

34. Which of the following reflexes requires simultaneous bilateral (left and right) control of the spinal cord to achieve the proper movement?
   a) monosynaptic stretch reflex.
   b) crossed extensor reflex.
   c) Golgi tendon organ reflex.
   d) polysynaptic withdrawal reflex.
   e) none of the above.

35. You are sitting in class, taking some notes on class material using your right hand. Where are the motor neurons likely responsible for this movement located?
   a) in the right dorsal-root ganglia.
   b) in the left dorsal-root ganglia.
   c) in the left ventral horn of the spinal cord.
   d) in the right dorsal horn of the spinal cord.
   e) in the right ventral horn of the spinal cord.

36. Which of the following element(s) is/are components of a motor unit?
   a) intrafusal muscle fibers.
   b) gamma motor neuron.
   c) extrafusal muscle fibers.
   d) muscle spindles.
   e) both b) and c)
37. Which major class of somatosensation is responsible for the detection of burning from a boiling cup of coffee spilled on your hand?
   a) hapsis.
   b) vibratory sensation.
   c) proprioception.
   d) Golgi tendon organ.
   e) nociception.

38. The stage of sleep that is characterized by a desynchronized cortical EEG and muscle atonia is called:
   a) A wake and alert state.
   b) Drowsy state.
   c) REM sleep.
   d) Stage 1 sleep.
   e) Stage 4 sleep.

39. Against your best efforts (who could blame you!!!), you feel very drowsy during some lectures on Tuesday and Thursday after lunch . . . If you were recording your brain waves during those boring lectures, which of the following patterns of brain activity would you most likely see?
   a) alpha waves.
   b) REM waves.
   c) delta waves.
   d) PGO spikes.
   e) beta waves.

40. The category of theories that postulates that sleep has evolved to keep organisms out of trouble when most vulnerable are known as:
   a) memory storage theories.
   b) circadian theories.
   c) passive theories.
   d) restorative theories.
   e) adaptive theories.

41. Which sleep stage do you normally go into first when going to bed at night?
   a) Stage 1.
   b) REM sleep.
   c) Stage 4.
   d) Stage 3.
   e) Stage 2.

42. Neural death and synaptic pruning:
   a) only take place during recovery from brain injury.
   b) are normal processes during brain development.
   c) only take place during injury to the nervous system.
   d) are required during neural migration.
   e) are required during neural differentiation.
43. Martha suffers from a condition in which she loses muscle tone uncontrollably, but remains conscious, a very serious and dangerous situation. She is suffering from:
   a) sleep apnea.
   b) seasonal affective disorder.
   c) night terrors.
   d) lucid dreams.
   e) sleep paralysis.

44. Which neurotransmitter is released at the neuromuscular junction, thus producing muscle contractions?
   a) acetylcholine
   b) glutamate
   c) GABA
   d) dopamine
   e) norepinephrine

45. The calcium necessary for the interaction between actin and myosin filaments during muscle contraction is released from:
   a) the motor neurons presynaptic terminals.
   b) myosin filaments.
   c) the actin filaments.
   d) the sarcoplasmic reticulum.
   e) the synaptic vesicles.

46. In the early pioneering studies of sleep, which region, when electrically stimulated with a small electrode, would \textbf{wake sleeping cats}?
   a) the frontal cortex.
   b) the hippocampus.
   c) the basal ganglia.
   d) the ascending reticular activating system.
   e) medial forebrain bundle.

47. When I was 3 years old, I did touch the red element of the stove top at home while Mom was cooking. Needless to say, I got a good burn on two of my fingers and generated enough tears to fill a large bucket. However, I never touched a red hot stove again in my life!!! What brain structure do you think is most likely to have supported this type of rapid learning?
   a) hypothalamus.
   b) cerebellum.
   c) amygdala.
   d) frontal cortex.
   e) basal ganglia.

48. If I tell you that a specific painful sensation is slow to adapt or does not show any adaptation, what does it mean?
   a) the pain receptors are difficult to activate (don't send action potentials easily).
   b) the pain receptors send signals (action potentials) only at the beginning of the painful stimulus.
   c) the pain receptors send signals (action potentials) for the entire duration of the pain stimulus.
   d) the pain receptors send signals (action potentials) only at the end of the painful stimulus.
   e) the pain receptors take a long time to begin to send signals (action potentials) to the brain.
49. The simplest spinal reflex that can help you maintain a specific arm position is called:
   a) the polysynaptic reflex.
   b) the Golgi tendon reflex.
   c) the crossed-extensor reflex.
   d) the acoustic startle reflex.
   e) the monosynaptic stretch reflex.

50. Jack wakes up many times a night, is tired and feels sleepy during the day. He is also overweight and snores. Which of the following sleep disturbances might he be suffering from?
   a) sleep apnea.
   b) seasonal affective disorder.
   c) narcolepsy.
   d) sleepwalking.
   e) delayed sleep/wake syndrome.

Answers: