Lecture #08 Cerebral Cortex Sensory Systems

Question 1: Second order axons from the ventral cochlear nuclei project mainly to which structure to process lateralization (left-right azimuthal direction) of low frequency sounds?

a) Medial superior olive

b) Inferior colliculus

c) Dorsal cochlear nuclei

d) Superior colliculus

e) Lateral superior olive

Lecture #08 Cerebral Cortex Sensory Systems

Question 2: Which is the gustatory nucleus?

a) Dorsomedial (medial dorsal) nucleus

b) Dorsolateral (lateral dorsal) nucleus

c) Rostral solitary nucleus

d) Rostral salivatory nucleus

e) Ventral postero-lateral nucleus (VPL)

Lecture #08 Cerebral Cortex Sensory Systems

Question 3: What does the medial superior olive help discriminate?

a) meaning of speech sounds

b) pitch of sounds

c) potentially toxic odors

d) direction of sounds

e) sequence of musical notes

Lecture #08 Cerebral Cortex Sensory Systems

Question 4: The ascending axons from the medial and lateral superior olive directly project mainly to which structure?

a) Inferior colliculus

b) Inferior brachium

c) Superior colliculus

d) Cochlear nuclei

e) Superior brachium

Lecture #08 Cerebral Cortex Sensory Systems

Question 5: Which area(s) is (are) specialized for proprioception?

a) Mesencephalic nucleus, Brodmann's area 3a

b) Left parietal cortex

c) Dorsolateral and central amygdala

d) Lateral horn, intermediolateral cell column

e) Heschl's gyrus

Lecture #08 Cerebral Cortex Sensory Systems

Question 6: Which visual deficit is most likely to follow left temporal lobe damage?

a) Left hemispatial neglect

b) Left upper field quadrantanopsia (pie-in-the-sky loss)

c) Right hemispatial neglect

d) Blindness for lower right visual field

e) Right upper field quadrantanopsia (pie-in-the-sky loss)

Lecture #08 Cerebral Cortex Sensory Systems

Question 7: What is Meyer's loop?

a) The re-decussation of the dorsal spinocerebellar tract so that it ends ipsilaterally in the cerebellum despite having a mainly contralateral course

b) The temporal course of upper visual hemifield optic radiations destined for the lower bank of the calcarine sulcus

c) The axons responsible for hole-in-the-pole or hole in the donut blindness for objects straight ahead with intact peripheral vision

d) The re-decussation of the ventral spinocerebellar tract so that it ends ipsilaterally in the cerebellum despite having a mainly contralateral course

e) The limbic pathway that originates in cerebral cortex and passes through a series of limbic structures to return to cerebral cortex

Lecture #08 Cerebral Cortex Sensory Systems

Question 8: Which best distinguishes the olfactory paths from other sensory paths?

a) They do not involve cranial nerves

b) They are contralateral

c) They project to paleocortex

d) They have a thalamic relay

e) They remain ipsilateral

Lecture #08 Cerebral Cortex Sensory Systems

Question 9: Which is the next step on the dorsal visual stream beyond the first or second visual area?

a) Cingulate cortex (areas 17 and 18)

b) Amygdala

c) Middle temporal area (MT)

d) Color area (V4)

e) Hippocampus (CA1-CA3)

Lecture #08 Cerebral Cortex Sensory Systems

Question 10: Which is a feature of topographic organization of neocortex?

a) Frontal, temporal, and parietal lobes have topographically organized areas, but occipital lobes do not

b) The trunk and belly tend to have disproportionately large representations in somatic maps

c) Cortical topographic maps usually represent the ipsilateral body half only

d) Sizes are precisely represented as equivalent sizes on topographic maps

e) Body parts with more detailed sensation or more sensory receptors are allotted a disproportionately large portion of somatic sensory cortex, distorting the maps

Lecture #08 Cerebral Cortex Sensory Systems

Question 11: Which area is known for having visual feature detectors?

a) Meyer's loop

b) Calcarine cortex

c) Prefrontal cortex

d) Middle temporal area (MT)

e) Inferotemporal cortex

Lecture #08 Cerebral Cortex Sensory Systems

Question 12: Which best distinguishes the gustatory paths from other sensory paths?

a) They are contralateral

b) They project to paleocortex

c) They do not involve cranial nerves

d) They remain ipsilateral

e) They have a thalamic relay

Lecture #08 Cerebral Cortex Sensory Systems

Question 13: Damage to the cuneus of the occipital lobe causes which deficit?

a) A specific blindness from which there is only partial recovery

b) Permanent scotoma in contralateral lower visual field quadrant

c) Temporary scotoma in contralateral lower visual field quadrant

d) Temporary scotoma in contralateral upper visual field quadrant

e) Permanent scotoma in contralateral upper visual field quadrant

Lecture #08 Cerebral Cortex Sensory Systems

Question 14: What body part occupies the largest part of rodent somatic sensory cortex?

a) Feet (hindpaws)

b) Hands (forepaws)

c) Sex organs

d) Mouth

e) Whiskers (vibrissae)

Lecture #08 Cerebral Cortex Sensory Systems

Question 15: What is the function of the lateral superior olive?

a) Projection of mossy fibers to the cerebellum

b) Processing direction of high frequency sounds

c) Relaying large fiber somatic sensory information

d) Processing sweet and bitter taste sensations

e) Projection of climbing fibers to the cerebellum

Lecture #08 Cerebral Cortex Sensory Systems

Question 16: Where is the fovea represented in calcarine (occipital) cortex?

a) Along the fundus

b) Lower bank

c) Anterior

d) Upper bank

e) Posterior

Lecture #08 Cerebral Cortex Sensory Systems

Question 17: Where are the secondary neurons of the gustatory pathway located?

a) Medial superior olive

b) Lateral superior olive

c) Caudal solitary nucleus

d) Rostral solitary nucleus

e) Inferior olive

Lecture #08 Cerebral Cortex Sensory Systems

Question 18: Damage to which structure(s) results in loss of pitch sequence discrimination (cannot name that tune)?

a) Heschl's gyrus (or gyri)

b) Medial geniculate nucleus

c) Superior colliculus

d) Cochlear nuclei

e) Inferior colliculus

Lecture #08 Cerebral Cortex Sensory Systems

Question 19: Damage to which structure(s) results in ipsilateral hearing loss?

a) Superior colliculus

b) Inferior colliculus

c) Heschl's gyrus (or gyri)

d) Medial geniculate nucleus

e) Cochlear nuclei

Lecture #08 Cerebral Cortex Sensory Systems

Question 20: Which is the next step on the ventral visual stream beyond the first or second visual area?

a) Color area (V4)

b) Middle temporal area (MT)

c) Cingulate cortex (areas 17 and 18)

d) Hippocampus (CA1-CA3)

e) Amygdala

Lecture #08 Cerebral Cortex Sensory Systems

Question 21: What body part is represented most laterally in human somatic sensory cortex?

a) Mouth

b) Feet

c) Sex organs

d) Hands

e) Trunk

Lecture #08 Cerebral Cortex Sensory Systems

Question 22: How are the magnocellular and parvocellular visual paths organized in the LGN?

a) Magnocellular axons project to LGN layers 1 and 2, parvocellular axons to layers 3-6

b) Magnocellular axons project rostrally in the LGN, parvocellular axons caudally

c) Magnocellular axons project along projection lines, parvocellular axons are off-line

d) Magnocellular axons project to the left LGN, parvocellular axons to the right LGN

e) A projection line contains axons from only one or the other path, not both