Lecture #07 Cerebral Cortex Organization

Question 1: Which two cortical layers, respectively, receive input from and project output back to the diencephalon?

a) 4 and 6

b) 5 and 6

c) 1 and 2

d) 2 and 5

e) 3 and 6

Lecture #07 Cerebral Cortex Organization

Question 2: What is best developed in macro-osmic cortex?

a) Pallium

b) Archicortex

c) Neocortex

d) Homogenetic cortex

e) Paleocortex

Lecture #07 Cerebral Cortex Organization

Question 3: Which two layers, respectively, are the main input and output layers of cerebral cortex?

a) 6 and 1

b) 4 and 5

c) 1 and 6

d) 5 and 6

e) 6 and 5

Lecture #07 Cerebral Cortex Organization

Question 4: Which is characteristic of local interneurons of neocortex?

a) Local interneurons are often pyramidal in shape

b) Local interneurons are usually excitatory and use the neurotransmitter glycine

c) Local interneurons receive their input from the dendritic spines of layer IV neurons

d) Local interneurons are most prevalent in layer V

e) Local interneurons are often stellate in shape

Lecture #07 Cerebral Cortex Organization

Question 5: What does the frontal lobe do?

a) Identify meaningful objects by name

b) Recognize faces

c) Respond to visual objects in the contralateral lower visual hemifield

d) Control movement and executive functions

e) Perform arithmetic calculations

Lecture #07 Cerebral Cortex Organization

Question 6: How are cortical layers 4 and 6 alike?

a) Both are mainly pyramidal cells

b) Both are mainly involved in cortico-cortical processing

c) Both have connections with the thalamus

d) Both project long axons to subcortical structures

e) Brodmann was unable to distinguish one form the other

Lecture #07 Cerebral Cortex Organization

Question 7: Damage to which area would most likely lead to the inability to remember a phone number for long enough to dial it?

a) Temporal association cortex

b) Parietal association cortex

c) Limbic efferents

d) Occipital association cortex

e) Prefrontal association cortex

Lecture #07 Cerebral Cortex Organization

Question 8: What cortical layer has the least neurons?

a) 6

b) 5

c) 3

d) 1

e) 2

Lecture #07 Cerebral Cortex Organization

Question 9: Which cortical layer receives major thalamic input?

a) 5

b) 2

c) 4

d) 6

e) 3

Lecture #07 Cerebral Cortex Organization

Question 10: Which is characteristic of layer VI of neocortex?

a) Layer VI has the fewest projection neurons of any layer

b) Layer VI receives the main input of axons from the thalamus

c) Local interneurons are most prevalent in layer VI

d) Layer VI sends the main cortical output of axons to the thalamus

e) Layer VI neurons are most often stellate in shape

Lecture #07 Cerebral Cortex Organization

Question 11: What type of cortex makes up the largest proportion of the cerebrum?

a) Paleocortex

b) Limbic cortex

c) Neocortex

d) Archicortex

e) Heterogenetic cortex

Lecture #07 Cerebral Cortex Organization

Question 12: Which are the largest cortical neurons?

a) Layer 6 cells of fusiform gyrus cortex

b) Stellate cells calcarine sulcus cortex

c) Betz cells of motor cortex

d) Stellate cells of fusiform gyrus cortex

e) Layer 4 cells of calcarine sulcus cortex

Lecture #07 Cerebral Cortex Organization

Question 13: Which best describes the laminar organization of the cerebral cortex?

a) The neocortex has 6 laminae of white matter, though layer IV may be nearly absent in agranular cortex areas

b) The neocortex has 6 laminae, with main input to layer IV and outputs from II, III, V, and VI

c) Dendritic spines provide output from stellate neurons to pyramidal neurons in a pial-to- white matter lamination

d) The allocortex has 6 laminae, with pyramidal cells primarily in layer IV

e) The neocortex has 3 laminae: stellate, pyramidal, and white matter

Lecture #07 Cerebral Cortex Organization

Question 14: What lies at a depth between the corona radiata and superior longitudinal fasciculus?

a) Uncinate fasciculus

b) Tapetum

c) Short association fibers

d) Arcuate fasciculus

e) Inferior longitudinal fasciculus

Lecture #07 Cerebral Cortex Organization

Question 15: Which sense has its primary cortical area in temporal cortex?

a) Visual

b) Proprioceptive

c) Auditory

d) Olfactory

e) Somatic

Lecture #07 Cerebral Cortex Organization

Question 16: Which two cortical layers are believed to be most involved in intrinsic cortical processing, the so called thinking layers?

a) 2 and 3

b) 5 and 6

c) 4 and 6

d) 4 and 5

e) 1 and 6

Lecture #07 Cerebral Cortex Organization

Question 17: Which neurons contribute most to cortico-cortical connections?

a) Corticostriate neurons of layer 5 and 6

b) Chandelier cells

c) Modified pyramidal cells of layer 6

d) Layer 1 neurons

e) Pyramidal neurons of layers 2 and 3

Lecture #07 Cerebral Cortex Organization

Question 18: What does the temporal lobe do (not counting Heschl's gyrus auditory cortex)?

a) Discriminate musical tone pitch

b) Direct attention

c) Process spatial relations

d) Respond to visual objects in the lower visual field

e) Recognize objects and faces

Lecture #07 Cerebral Cortex Organization

Question 19: Damage to which specific part of the brain was most likely responsible for personality changes observed in the famous patient Phineas Gage?

a) Dorsolateral frontal cortex

b) Inferotemporal cortex

c) Right parietal cortex

d) Ventromedial prefrontal cortex

e) Temporal pole

Lecture #07 Cerebral Cortex Organization

Question 20: Which is characteristic of layer II of neocortex?

a) Layer II neurons develop later than neurons in layers III-VI

b) Layer II neurons are called callosal neurons because many their axons have interhemispheric terminations via the corpus callosum

c) Layer II is the layer most purely comprised of stellate neurons

d) Layer II is the site of the fusiform neurons

e) Layer II is the thalamic input layer

Lecture #07 Cerebral Cortex Organization

Question 21: Why are cortical layers 2 and 3 often described as a single layer 2-3?

a) Both project long axons to subcortical structures

b) Both are involved in cortico-cortical processing

c) Both have stellate cells

d) Both have granular cells

e) Brodmann was unable to distinguish one from the other