2014Exam2

**Wang**

Q1.

Properties of the basilar membrane; sensitivity to frequency based on region. Wavelengths

Q2.

a) Consistent phasic response as the same stimulus is presented over time (synchronized with the stimulus)

b) Depolarization of the hair cells. Auditory nerves are tied to the potential of the hair cells, therefore similar waveforms elicit similar behavior.

Q3.

a) poisson plus spike @ isi number (since phase locking)

b) poisson with very little difference than normal

Q4.

Firing rate and temporal discharge pattern.

Firing rate: number of spikes in period of time (mean)

Temporal discharge pattern: Map of the firing over time (function)

**Young**

Q1.

1. it would work; all you need is auditory nerve

2. it wouldn’t work; the auditory nerve sends the signal so you need it

3. it would work; all you need is the auditory nerve

Q2.

(2) slope of B, intercept of A

Shadmehr

Q1.

Dopamine, produced by basal ganglia, received in substantia nigra

Q2.

First case, the tray will go up, because the waiter is not anticipating the change in weight. In the second case, the tray will stay static, because he can anticipate the change. Cerebellum is responsible for this; it predicts sensory sequences of motor commands; coordinate multi-join movements.

Q3.

a) no spatial memory – therefore inhibited hippocampus

b) underestimation of force – therefore damaged primary motor cortex

c) poor/no coordination of multi-joint movement – cerebellum

d) neglect – right parietal cortex

e) can’t identify function of object – visual cortex, temporal, parietal

Q4.

The blood vessels in the immediate area burst and cause a pressure build up which kill nerve cells by preventing flow of oxygen. Dying nerve cells release glutamate, which kills glial cells downstream, which prevents upkeep of myelin, which causes further neural degradation

Q5.

a) False

b) True  
c) False – high activation of spindle, means high length of muscle

d) True

e) True

f) True

g) False – PPC is fixation coordinates. Pre-motor is hand-centric coordinates

h) Unlikely – pontine reticulotory excites, medulla activation inhibits

i) Unlikely

j) Unlikely

Q6.

Cervical, Thoracic, Lumbar, Sacral

Q7.

Shoulder, because it’s controlled in the cervical section of the spine whereas the foot is controlled in the lumbar section.

Q8.

Translate similarly to the fixation point so that the relationship is maintained

Q9.

You restrain the functioning (right) arm. This is because you don’t want to build an overreliance on the right, such that the right motor cortex’s plasticity repurposes the region responsible for hand movement.

Q10.

a) normal centered on 0

b) smaller magnitude or bigger

Q11.

a) lambda = sqrt(a^2 + b^2 + 2abcos(q) )

b) torque = - d lambda / d q \* f

c)