PSY290F Midterm Test (30 points total)
October 16, 2012
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Short Answers (3 points each)

1. List the 6 different cutaneous receptor types (2 or 3 words each):

meisner corpuscles | merkels disks | ruffini corpuscles

free nerve endings | hair endings | pacinian corpuscles

(3)

2. Immunocytochemistry is a method to study where neurons proteins are located in tissues using labelled dyes antibodies. A good label to use is fluorescent. (one or 3 words here)

(1)

3. List 3 methods for imaging human brain activity:

PET (positron emmission tomography) FMRI (functional magnetic resonance imaging)

CT (computed tomography) (one to 3 words, or several letters).

→ this is not a functional scan

(2)

4. List 3 different nuclei in the CNS where pain can be controlled by opiates or by serotonin (2 or 3 words).

raffe nuclei | dorsal horn

periaqueductal grey (PAG)

(3)

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Definitions (Write 1 or 2 sentences) (2 points each):

(1) receptive field – the area which a sensory neuron will fire if it is touched causing it to be excitatory. For ex. merkel disks have small receptive fields.

could be inhibitory

spinothalamic or "anterolateral" pathway (include functions if possible)

The functions corresponds to temperature and pain within the body.

(1) where does it project from/to?

muscarinic receptor -- these are receptors that attach to acetyl choline neurotransmitters on the muscles of the body.

(1) -metabotropic

trigeminal nerve - This is spinal cranial nerve known as (V). It contains 3 branches (2 sensory (for the face & top of the head). It can be further divided into (V1 – VIII).

(2)

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Essay 10 points

Describe the anatomy of the olfactory system, from receptors to brain. Then discuss the variety of smells that can be processed by olfactory receptors and labelled lines.

In short the olfactory system starts by airborne chemicals going up the nasal path & straight to the brain (it initially by-passes the thalamus). The signal order of travel within the system is through the olfactory bulbs to the piriform cortex, then to the amygdala, from here the signal travels to the thalamus, and lastly the orbito frontal cortex. The glomerous is where groups of receptors are bundled. The smell system is the oldest mammilian system which also has one receptor per gene. Humm beings have 400 genes activated for smelling while mice have 1300 genes active 3-5% of their genome. Smell has many functions for a mammal as it can tell hamsters whether to mate or if another conspecific is an aggressor. It was believed that man used smell a lot more to navigate their environment in the early evolutionary days. Smell is also known to be associated with taste as the two senses compliment each other.

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