Final exam questions. COGS177/COGS260 Wi2013

1) The Genovesio 2009 paper on duration comparison that was discussed in class demonstrated that several different forms of task-related activity are present in the prefrontal cortex during task performance. Name the major types of task-related activity and discuss how they relate to task phase (2/3’s page max)

2) According to the Leon and Shadlen 2003 paper discussed in class, what feature of LIP activity provides a clue as to what strategy the monkey applies to the task? (this should require no more than 1/4 of a page)

3) In most ‘emergent’ models for tracking time, what is it that actually constitutes an indicator of the passage of time (this should require no more than 1/4 of a page)?

4) Name the three basic components required in a dedicated timing system (this should require no more than a 1/4 page)

5) Name 3 types of ‘arbitrary’ (i.e., non-egocentric) space that appear to be mapped by neuronal activity in the parietal cortex and note whether each applies to monkey, human, and/or rat (1/2 page should suffice)

6) Based on the Crowe paper on object-based mapping discussed in class, name the difference in the form by which parietal neurons map the egocentric versus object-centered position of a visual item.

7) The experiments by Nieder discussed in class addressed the issue of neurophysiological correlates for numerosity in several ways (e.g., symbols associated with numerosities, counting to reach a numerosity). One revealed a difference between parietal and prefrontal cortex. What was it? (1/3 page max)

8) In the Meck paper on representation of time, it is proposed that dopamine neurons serve what role in the striatal beat frequency (SBF) model for time interval estimation? What impact does excess or depleted dopamine have on interval timing? (1/2 page max)