NSCI 401

Final exam questions

(Fall 2011)

1. How does the Hodgkin-Huxley model generate spikes and what are the underlying biological mechanisms?
2. What does the interspike interval distribution tell us about neural circuit properties and why?
3. Name two receptive field properties and explain how they are important for computations in the brain.
4. How does optimal movement decoding (Bayesian decoding) from multiple simultaneously recorded neurons work?
5. Explain the consequences and limitations of the superposition principle for linear control theory applied to saccades.
6. How does optimal feedback control describe arm movements? What are the advantages of this control scheme over other schemes?
7. How would the urgency gating model explain decision making based on random-dot motion stimuli?
8. Where in the selective tuning model would you expect to find priority maps (justify why)? How are they computed within the selective tuning framework?
9. Name two computational ways the brain can learn and explain how they work.

Note: during the exam, there are ***no aids allowed***. Don't forget to bring your Queen's students photo ID to the exam!