

NSCI 401

## Final exam questions

(Winter 2010)

1. What are the mechanisms that lead to the generation of action potentials?
2. Name one example of population coding and explain how it works.
3. How do gain fields achieve computations in the brain?
4. What are priors and how do they influence statistical inference in the Bayesian framework? How do priors influence the results in a decoding problem?
5. Explain the main processing steps required in generating saccadic eye movements and how they work.
6. State two different optimality principles and how they shape motor control.
7. How do simple diffusion models explain decision making in the presence of multiple alternatives?
8. Explain how saliency maps are computed and used to guide attention.
9. Why is spike-time dependent plasticity (STDP) a form of Hebbian learning and how can STDP be used to solve the distal reward problem?
10. How can simple memory models explain the difference between anterograde and retrograde amnesia?