

NSCI 401

Final exam questions

(Fall 2016)

1. Explain 5 benefits of computational modelling approaches for neuroscience research.
2. Why is feedback so vital in motor control?
3. What is the best way to decide in the presence of noisy evidence?
4. Outline the role of inhibition in the brain. Provide 3 examples and explain what inhibition does in each case.
5. What are the computational principles underlying visual working memory?
6. How does motor learning work? How does reward influence motor learning?
7. Our brain relies on state estimation for perception, motor planning and motor control. Why is this so important and how does it work?
8. Visual-vestibular integration underlies heading perception. What are the computational mechanisms governing this phenomenon and how can the Bayesian framework explain motion sickness? (you need to extrapolate from what you have learned in class here!)
9. How does gain modulation contribute to spatial constancy?
10. Why is it problematic to think of neurons to “code” something? What’s an alternative view?

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