

UNIVERSITY OF LONDON
NEUROSCIENCE MSc EXAMINATION

**For Internal Students of the
INSTITUTE OF PSYCHIATRY
King's College London**

21st January 2013 at 14:00 - 16:30

PAPER A3

Answer FOUR questions only

1. Explain how motor control is involved in the execution of movements. Describe the hypothesis of optimal feedback control giving an example.
2. Summarise the regulation of the hypothalamic-pituitary axis (HPA), including its negative feedback.
3. What systems regulating adaptation to environmental stimuli have been described in addiction research? What are the genes implicated?
4. Describe the scientific basis for 'the dopamine hypothesis of drug dependence'
5. Outline which structures which are known to support long-term memory function in humans and how these structures are damaged in patients with amnesia.
6. Compare and contrast the clinical features of two common types of dementia.
7. What is the evidence for altered synaptic connectivity in schizophrenia?
8. Compare and contrast the main functional neuroimaging techniques.
9. Why are at least two conditions needed for task-based functional magnetic resonance imaging?
10. Amyotrophic lateral sclerosis (motor neuron disease) and frontotemporal dementia represent two ends of a phenotypic spectrum. Discuss the clinical, genetic and pathological basis for their links?
11. Describe the proteinopathy cascade hypothesis of neurodegeneration using at least one type of neurodegenerative disease to illustrate your answer.
12. How do the molecular changes in Parkinson's disease relate to the clinical features?