

KING'S COLLEGE LONDON
NEUROSCIENCE MSc EXAMINATION

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

23rd OF JANUARY 2014 at 14:00 - 16:30

PAPER A3

Answer **FOUR** questions only

A3.1 Systems neuroscience

1. What do studies in primates and in human clinical populations tell us about the role of the striatum in cognition?
2. How does receptive organisation change between retina and primary visual cortex? What is the functional significance of these changes?

A3.2 Addiction biology

3. Define drug addiction according to the DSM V criteria. Using three specific examples, describe how these criteria can be modelled in experimental rodents.

A3.3 Neuropsychology of mental health

4. Outline a taxonomy of memory and indicate what aspects of memory are affected and what relatively preserved in pure amnesic conditions.
5. What is the evidence that schizophrenia is a disorder of brain development?

A3.4 Neuroimaging

6. Briefly comment on how preclinical neuroimaging differs from clinical imaging, in terms of dealing with subjects, data acquisition and data analysis.
7. Describe how MR-based structural and functional neuroimaging techniques differ in terms of spatial and temporal resolutions and how this determines their usage.

A3.5 Neurodegeneration

8. Describe how the proteinopathy cascade hypothesis of neurodegeneration can be supported by disease pathophysiology (using at least one example).
9. What aetiological and pathological features does amyotrophic lateral sclerosis share with the other major neurodegenerative disorders (AD, PD, HD)?
10. From gene discovery onwards, what steps were followed to reach a clinical trial of enzyme replacement in late infantile NCL?
11. Discuss the contribution of alpha synuclein to the pathogenesis of Parkinson's disease.