

NEUROSCIENCE MSc EXAMINATION

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

13th January 2012 14:00 - 16:30 pm

PAPER B Further Neuroscience

Answer FOUR questions only

1. Why is autophagy so important for neuronal homeostasis?
2. Describe the genetic basis of Huntington's disease, and explain using examples some of the pathogenic mechanisms identified from studying this neurodegenerative disorder.
3. Describe the evidence that epigenetic processes play a role in neuropsychiatric disease .
4. Summarise the genetic evidence for the amyloid cascade hypothesis in Alzheimer's disease.
5. Is BMP inhibition necessary and sufficient for neural induction?
6. Explain the importance of epigenetics in the development of different neural cell types, including details of the mechanisms by which particular epigenetic marks are written, read and erased.
7. Outline the different types of immune defence that control viral infection and viral spread. Briefly discuss how these defences operate within the CNS. (Illustrate your answer with some examples of viruses that infect the CNS).
8. How has neuroimaging improved our understanding of the pathophysiology of schizophrenia?
9. Discuss the strengths and weaknesses of three imaging modalities used for the diagnosis of Alzheimer's disease.
10. How has imaging of human brain structure evolved over the years? What types of analysis techniques are applied to structural MRI scans in modern psychiatry research?
11. Compare and contrast urine and saliva as biological matrices for on-site illicit drug screening.
12. Compare and contrast the use and effectiveness of methadone and naltrexone in the treatment of heroin dependence.