

UNIVERSITY OF LONDON
NEUROSCIENCE MSc EXAMINATION

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

8th March 2010 10:00 am - 12:30 pm

Neuroimaging

PAPER B5

Answer FOUR questions only

1. Describe the best way of combining the results from many structural MRI studies in Major Depressive Disorder. What are the main findings from structural MRI studies in Major Depressive Disorder?
2. Briefly describe two major advantages and one disadvantage of Arterial Spin Labelling as a means of measuring cerebral perfusion when compared to other conventional techniques such as positron emission tomography (PET).
3. How can neuroimaging be used to measure amyloid plaques in Alzheimer's disease? What anatomical sites are the first to show atrophy in Alzheimer's disease and how can they be imaged?
4. What can PET tell us about brain disorders? Give examples with reference to published findings.
5. Why is pain so difficult to study? Use examples from at least three different methodologies to demonstrate how cognitive neuroscience techniques have contributed to our understanding of acute and chronic pain states.
6. What issues need to be borne in mind when applying MRI to patients with temporal lobe epilepsy?
7. How could you ascertain whether a drug given to a subject as part of an fMRI experiment has a global effect on the brain?
8. Discuss the use of image registration MRI brain imaging applications. Include an explanation of the differences between rigid and non-rigid registration and giving examples, indicate which you would use and why.