

# NEUROSCIENCE MSc EXAMINATION

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

21<sup>st</sup> March 2011 10:00 - 12:30

## Neuroimaging

### PAPER B5

Answer **FOUR** questions only

1. Describe how diffusion tensor tractography (DTT) can be used to measure fibre tracts in vivo. What are the two main measures used to characterise diffusion in fibre tracts?
2. How is a magnetic resonance spectrum acquired? Name four MRS metabolites and briefly describe what they can be used to measure in vivo.
3. How can dementia with Lewy bodies be distinguished from Alzheimer's disease using imaging?
4. Describe the main applications of neuroimaging in addictions.
5. Which imaging modality is best used for the study of multiple sclerosis? Describe how imaging can be used as a tool in clinical trials of new drugs for multiple sclerosis.
6. What are the main findings from structural MRI studies in bipolar disorder? Can structural MRI be used to diagnose bipolar disorder? If not, why not?
7. What are the principal analysis steps for creating a functional MRI activation map for a single subject?
8. What are the principal analysis steps for creating a group difference fMRI map (e.g. for illustrating the difference between a patient group and a control group)?