

**UNIVERSITY COLLEGE LONDON**

*University of London*

**EXAMINATION FOR INTERNAL STUDENTS**

*For The Following Qualification:-*

*M.Sc.*

**M.Sc. Clinical Neuroscience: Paper 3**

**COURSE CODE : CLNEM003**

**DATE : 09-MAY-03**

**TIME : 10.00**

**TIME ALLOWED : 3 Hours**

## **PAPER THREE**

*12 general questions. Answer two questions only. Each question carries 50 marks. Allow about 90 min for each question.*

***PLEASE IGNORE NOTE 2.ON THE FRONT COVER OF THE ANSWER BOOK AND WRITE ON ONE SIDE OF THE PAPER ONLY, BEGINNING EACH NEW QUESTION ON A FRESH PAGE***

- 1 How has the genetic analysis of brain tumours contributed to our understanding of their biology? Has there been any benefit to the patient?
- 2 With reference to tetrahydrobiopterin (BH4) metabolism, discuss the biochemical abnormalities that can occur as a result of an inborn error of BH4 metabolism. In addition, (a) explain the biochemical approach used to reach a diagnosis of an inborn error of BH4 metabolism and (b) the therapeutic strategies used to treat such patients.
- 3 Critically appraise the arguments for and against multiple sclerosis being an autoimmune disease.
- 4 Discuss the differences in presentation, pathogenesis and treatment of Guillain-Barré and vasculitic neuropathy.
- 5 Describe the role of nitric oxide in the brain, including the role of the different isoforms, their role in normal signalling in the brain and their malfunction in neuronal disease mechanisms.
- 6 Discuss the various systemic drug treatments used clinically in the management of chronic neuropathic pain in patients with neurological disease. Using a particular disorder or a range of disorders, you should discuss the prevalence of pain in the disorder(s), the extent to which the pain is amenable to treatment of an identifiable underlying cause, which different types of pain occur, the evidence of benefit from various groups of drugs and the limitations of drug use as a result of side effects.
- 7 'Faints, fits and funny turns' make up 7% of the Accident and Emergency caseload. What contribution can investigation of autonomic function make to rapid diagnosis and effective management? Justify your answer by giving an example of an autonomic investigation pathway for loss of consciousness in an older person, detailing the reasons for the tests, the mechanistic understanding the results provide and potential treatments.
- 8 How has the study of neurological disease furthered our understanding of normal human physiology?
- 9 Describe a typical fMRI experiment, and list the major confounding factors that must be accounted for in data analysis.
- 10 Discuss whether object recognition is accomplished by a single or by multiple specific neural systems based on evidence from (i) electrophysiological studies in primates, (ii) neuropsychological and (iii) functional imaging studies in humans.

11 What evidence is there for plasticity in the sensorimotor system, and how can such plasticity be enhanced by neurorehabilitation?

12 As Minister for Health, it is your responsibility to ensure that funds for research into neurological illness are spent in the most cost-effective way, bringing maximum benefit to as many patients as possible. Write a policy document indicating how this could be achieved.

[End of paper]