UNIVERSITY COLLEGE LONDON

University of London

EXAMINATION FOR INTERNAL STUDENTS

For The Following Qualification:-

M.Sc.

M.Sc. Clinical Neuroscience: Paper 2

COURSE CODE	:	**CLNEM002**
DATE	:	**06-MAY-03**
TIME	:	**10.00**
TIME ALLOWED	:	**3 Hours**

03-N0026-3-40

TURN OVER

PAPER TWO

In *Part 1* of the paper, *answer three essay questions.*
You must answer:
two questions from Section A (25 marks each)
one question from Section B (25 marks)
Allow yourself approx. 45 min per question.

In *Part 2* of the paper, *answer three short-answer questions* (8 marks each)
Allow yourself approx. 15 min per 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

Part 1

Section A

12 questions from Theme C (Systems Neuroscience)

1 Discuss the possible functional significance of descending control of spinal nociception.

2 Briefly describe a hypothetical case history of a patient with neuropathic pain and discuss the relative merits and disadvantages of three techniques of somatosensory stimulation as a potential strategy for treatment.

3 How and why is the cerebral cortex important for control of skilled voluntary movement?

4 Describe how transcranial magnetic stimulation (TMS) can be used to investigate the connectivity of motor and non-motor areas of the human cerebral cortex.

5 How does the cerebellum contribute to skilful motor control?

6 Give the possible reasons why a patient with Parkinson's Disease might have urinary symptoms.

7 To what extent can the symptomatology of movement disorders be explained by current understanding of basal ganglia function/dysfunction?

8 Describe the clinical, pathological and genetic features of Huntington's disease.

9 What are the common indications and contra-indications of surgery for Parkinson's disease?

10 Describe the clinical features of Menière's Disease and what is known of the pathophysiology of this condition. Detail the investigations that can be done to support the diagnosis and briefly list the management options available.

11 Describe how clinical electrophysiology can be used to discriminate between optic nerve and retinal disorders.

12 Discuss the cerebral cortical and brainstem neural centres involved in the generation of horizontal saccades.

Section B

6 questions from Theme D (Higher Functions of the Brain)

13 What aspects of the cortical circulation afford it a degree of redundancy (protection) in the event of a stroke?

14 The evaluation of rehabilitation must be based on scientifically sound outcome measures. Discuss.

15 How does the brain separate visual motion and colour processing? Why should this be so?

16 Is the medial temporal lobe amnesic syndrome better characterised in terms of "declarative/nondeclarative" or "episodic/semantic" memory?

17 In neuropsychological studies, what is the relationship between evidence from patients with brain lesions and from brain imaging studies of healthy volunteers?

18 Describe the role of protein aggregation in the pathomechanism of neurodegenerative diseases.

Part 2

10 short-answer questions on Themes C and D

19 What is a nociceptor?

20 There are an infinite number of movements which could move the hand from one point in space to another. What are the computational principles by which one movement is selected over another?

21 Write short notes on the size principle.

22 Detail the shortcomings of dopamine replacement therapy in Parkinson's disease.

23 List and define the five principal categories of hyperkinetic movement, and give the name of five diseases that each cause one or more of them.

24 Describe 4 different types of eye movements and their role in high acuity vision.

25 A raised cholesterol is not an impressive risk factor for stroke, but reducing it significantly reduces stroke risk. Discuss.

26 What are the principal methods for investigating the relationships between brain and behaviour?

27 What cognitive processes must be intact for succesful object recognition?

28 Outline the main theoretical frameworks that have been proposed to explain the role of the hippocampus in memory.

[End of paper]