

The University of Melbourne

Semester Two 2004

Department: Anatomy and Cell Biology
Subject Number: 516-305/512-975
Subject Title: Structure and Function of the Brain

Exam Duration: 2 hours

Reading Time: 15 minutes

This paper has 2 pages

Authorized materials:

None allowed

Instructions to Invigilators:

Script Books: 6 x 6 page
Exam paper may be removed from the exam room

Instructions to Students:

This exam has 6 questions
Each of the questions should take 20 minutes.
Each question is worth equal marks
YOU MUST ATTEMPT ALL QUESTIONS
Answer all questions in the script book provided.
Begin each question in a new script book.

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of the Brain

1. In most individuals language is lateralised to one side of the brain. Discuss the evidence for this and, with the aid of diagrams, describe the regions of the brain involved in language processing and speech.
2. Many areas of the cerebral cortex contribute to the production of movement. Describe the contributions of these regions to motor activity.
3. Explain how populations of SAI afferents, innervating Merkel complexes in the digits, provide information to the motor control system that is crucial for precision manipulation.
4. A) What molecular and cellular changes have been associated with synaptic plasticity, and how might these changes be involved in learning and memory?

OR *(answer only one of A or B)*

B) What categories can learning and memory be divided into, what brain regions are known to be involved, and how have brain imaging and lesion studies provided new insights in this field?
5. Nogo A inhibits the growth of axons through myelinated tissue. What is Nogo A and what approaches involving Nogo A might be fruitful in helping to repair spinal injury?
6. Describe how the retina responds to a spot of red light. Include in your answer a description of the structure of the retina, the major circuits within the retina and the underlying mechanism(s) for creating the centre/surround organization.

End of Examination