

**OLLSCOIL NA hÉIREANN
COLÁISTE NA hOLLSCOILLE, GAILLIMH**

SEMESTER 1 EXAMINATION, 1999

M.Sc. NEUROPHARMACOLOGY

NEUROPHARMACOLOGY I (PM 502)

Professor J. Folan-Curran

Professor M. Kane

Professor J. James

Dr. J. Donlon

Professor I. Campbell

Time allowed: **THREE** hours

Please attempt **FIVE** questions, answer **TWO** questions from Section 1, and answer **ONE** question each from Sections 2,3 and 4. Students are requested to use separate answer books for each question.

SECTION 1: NEUROANATOMY

1. Write a general account of the basal ganglia.
2. Outline the developmental changes in the neural tube which results in the formation of the cerebral hemispheres.
3. Write brief notes on **THREE** of the following:
 - (a) Middle cerebral artery
 - (b) Neuroglia
 - (c) The corticospinal tract
 - (d) The structure of a typical synapse
4. Write a general description of the structure and list the afferent and efferent connections of the hippocampus.

PTO

SECTION 2: NEUROCHEMISTRY

5. Explain the dependence of the brain on oxygen and glucose.
6. Discuss the properties of either:
 - (a) adrenergic receptors **OR**
 - (b) glutamatergic receptors.

SECTION 3: NEUROPHYSIOLOGY

7. Describe succinctly the basis of both the resting membrane potential and the action potential in nerve.
8. Describe how an action potential may be generated in an alpha motor neuron by synaptic input - refer to both EPSPs and IPSPs.

SECTION 4: PSYCHOLOGY

(Answer **all** parts of **ONE** question. Write a maximum of one page on each of the parts)

9.
 - (a) Describe two types of reliability and two types of validity relevant to the use of psychometric tests.
 - (b) Describe how respondent (classical) conditioning principles can be used to explain the development of drug tolerance in persons who habitually self-administer heroin.
 - (c) In "operant behavioural pharmacology", various methods are used to determine the abuse liability of self-administered drugs. Name and describe any two such methods.
 - (d) Outline key aspects of the controversy concerning the effects of caffeine on psychomotor/cognitive performance.
10.
 - (a) Describe two types of "subjective" and two types of "objective" psychometric tests/methods for measuring the effects of psychotropic drugs.
 - (b) Describe how operant conditioning contributes to the habitual self-administration of psychotropic drugs.
 - (c) What are the major defining features of placebos, and outline the possible involvement of respondent (classical) conditioning in the development of placebo effects.
 - (d) Outline key aspects of the controversy concerning the effects of caffeine on blood pressure and the possible involvement of habitual caffeine use in the development of cardiovascular disease.