

NATIONAL UNIVERSITY OF IRELAND GALWAY
SPRING EXAMINATIONS 2000
THIRD SCIENCE EXAMINATION

APPLIED PHARMACOLOGY AND TOXICOLOGY PM301

Professor G. Shaw

Dr. J.M. O'Donnell

Time allowed: Three hours.

Answer FIVE questions, at least two from each section.

Use separate answer books for each section

SECTION A.

1. What is meant by the term structure:activity relations(S.A.R.)? Illustrate with examples how S.A.R. has been studied experimentally.
2. Outline the methods by which new drugs can be discovered by laboratory investigations. What are the desirable properties of a lead compound for selection for further development as a useful drug ?
3. Explain briefly what is meant by the terms *specificity*, *affinity*, *efficacy*, *potency* in respect of drugs. Describe how a log dose:response (LDR) graph can be used to distinguish between competitive and non-competitive antagonist drugs
4. Write an essay on the main features of mammalian drug metabolism

SECTION B.

5. Outline the available *in vitro* test methods for the assessment of the toxic potential of chemicals. Discuss the limitations of these methods.
6. Give an account of *either* a) mutagenesis *or* b) teratogenesis
7. Describe the mechanisms by which chemicals exert harmful effects on *either* a) liver *or* b) nervous system
8. Write an essay on the sources and effects of major environmental pollutants in the Irish natural environment.