

OLLSCOIL NA hÉIREANN
NATIONAL UNIVERSITY OF IRELAND, GALWAY

SUMMER EXAMINATIONS, 2000

FIRST-YEAR SCIENCE

BIOLOGY

Second Paper

Time allowed: *two and a half* hours.

Answer *four* questions, at least *one* from each section.

Use a separate answer book for *each* section.

Section A

Professor P. Gahan
Professor M.D. Guiry
Professor P.M.T. Curran
Dr M. McDonald
Dr B. Kelly
Dr. J. Fuller

1. Describe the main factors controlling stomatal movement.
2. Describe, with the aid of diagrams, the asexual and sexual anatomy, and the life cycle of the salmon-infecting fungus *Saprolegnia parasitica*.
3. Write notes on **four** of the following:
 - (a) Endoplasmic reticulum;
 - (b) Vacuoles in plant cells;
 - (c) Isogamy;
 - (d) Scalariform conjugation;
 - (e) Alginates in seaweeds.
4. Using a clearly labelled diagram, describe the life history of the fern (Pteridophyta).

Section B

Professor N. Price
Professor J. Smith
and the internal examiners

5. Write an essay on enzymes.
6. Answer **two** of the following:
 - (a) What are hydrogen bonds? Illustrate their significance in the structure of biomolecules, using examples.
 - (b) Describe the structure of carbohydrates.
 - (c) Describe the process of DNA replication.
 - (d) Explain what is meant by the 'genetic code'.
7. Write an essay on 'Exchanging Genetic Information in Bacteria'.
8. Write an essay on 'Chromosome Non-Disjunction'.