

OLLSCOIL NA hÉIREANN
NATIONAL UNIVERSITY OF IRELAND, GALWAY

AUTUMN EXAMINATIONS, 2002

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 M.J. Dring
Professor M.D. Guiry
Professor P.M.T. Curran
Professor M. O'Connell
Dr M. McDonald

1. Describe the rôle of gibberellic acid in seed germination.
2. Using clearly labelled diagrams, describe fruit-body anatomy and basidiospore development in *Agaricus bisporus*.
3. Give an illustrated account of the life history of **either** *Fucus* (Phaeophyta) or *Spirogyra* (Chlorophyta).
4. Give a concise account of the main types of bogs in Ireland.

Section B

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

5. Describe the three major pathways involved in cellular respiration.
6. Answer **two** of the following:
 - (a) Describe the four levels of protein structure.
 - (b) Describe the various ways in which enzyme activity is regulated in the cell.
 - (c) Describe the process of DNA replication.
 - (d) Explain what is meant by the genetic code.
7. Write an essay on "Applications of Microbiology to Industry".
8. Write an essay on "The Inheritance of Recessive Alleles in Man". In your essay, include examples of human disorders caused by the inheritance of recessive alleles of genes on both the autosomes and the sex chromosomes.