

OLLSCOIL NA hÉIREANN  
NATIONAL UNIVERSITY OF IRELAND, GALWAY

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SUMMER EXAMINATIONS, 1999

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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  
and the internal examiners

1. Describe the light reactions of photosynthesis.
2. Describe, with the aid of diagrams, soft-rot decay of wood by fungi in the sea.
3. Write notes on **four** of the following:
  - (a) Agar;
  - (b) Scalariform conjugation;
  - (c) Zoospore;
  - (d) Golgi bodies;
  - (e) Plant vacuoles.
4. Compare and contrast the monocotyledenous and dicotyledenous flowering plants (monocots and dicots).

Section B

Professor J. Mayer  
Professor J. Smith  
and the internal examiners

5. Describe the general structure of RNA and the rôle of mRNA, tRNA and rRNA in translation (protein synthesis).
6. Write descriptions on **two** of the following:
  - (a) the four levels of protein structure;
  - (b) the three major pathways involved in cellular respiration (aerobic);
  - (c) the general structures and functions of carbohydrates in living systems;
  - (d) the basic steps in gene cloning and outline the possible beneficial applications of this technology.
7. Write an essay on "Genetic Exchange in Bacteria".
8. Write an essay on "Chromosome Non-Disjunction in Man".