

National University of Ireland, Galway
Ollscoil na hÉireann, Gaillimh

SUMMER EXAMINATIONS 2000 HONOURS

Denominated Degree in Biotechnology (4BY 221)

BIOTECHNOLOGY (BG 401)

First Paper

External Examiner: Professor N.C. Price

Time Allowed: Three hours

Write on *three* of the following topics, choosing at least *one* from each section.
Start each answer in a new answer book and write the number on the front.

SECTION A

1. Discuss the feasibility, advantages and disadvantages of the use of fungi to bioremediate soils contaminated by aromatic organic pollutants.
2. Discuss the applications of microorganisms or their components for the removal and/or recovery of metals from industrial and mining wastewaters.
3. "Homoacetogens are highly unusual in that they can derive energy and reducing power by autotrophic growth on H_2/CO_2 and by heterotrophic growth on organic compounds, such as glucose." Discuss this statement.

SECTION B

4. Despite considerable problems crystallographers are today obtaining atomic resolution structural information on large molecular weight proteins. Describe, (a) the levels of structural information that X-ray crystallography can provide, (b) the problems that must be overcome to obtain high-resolution information, and (c) the methods used to overcome these obstacles.
5. Outline the important considerations in selecting an expression system for glycosylated proteins.
6. Discuss the serine proteases with respect to their mechanism of action and their evolutionary relationships.