

National University of Ireland, Galway
Ollscoil na hÉireann, Gaillimh

SUMMER EXAMINATIONS 2000 HONOURS

Denominated Degree in Biotechnology (4BY 221)

BIOTECHNOLOGY (BG 401)

Second 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 approaches to the sterilisation of large bioprocessors and their contents (medium).
2. Discuss how effective agitation and aeration are achieved in a conventional (mechanically agitated and sparged) bioprocessor.
3. Write an essay on fed-batch cultures. What advantages do they have for the industrial microbiologist?

SECTION B

4. Discuss the mechanisms by which genomic stability is maintained in mammalian cells.
5. Describe the role of transcription factors in regulating eucaryotic gene expression, with particular reference to constitutive, cell type-specific or inducible transcription.
6. Discuss the involvement of mitochondria in apoptosis.
7. Describe how Dorsal and Bicoid proteins are involved in establishing the embryonic axes during *Drosophila* development.