

NATIONAL UNIVERSITY OF IRELAND, GALWAY
Ollscoil na hÉireann, Gaillimh

Summer Examinations, 2000 - Honours
B.Sc. Degree and M.Sc. Qualifying Examinations
BIOCHEMISTRY (BI401)

Third Paper

Extern Examiner: Professor N.C. Price

Time allowed: *Three Hours*

Write on **three** of the following topics, choosing at least one from each section.
Please start each topic with a new answer book and clearly indicate the number on the front.

Section A

1. There is evidence that protein-protein coupling enables cross-talk between dopamine D5 and γ -aminobutyric acid A (GABA-A) receptors. Describe these receptors and suggest experiments to verify protein-protein coupling between them.
2. The 70 kDa recombinant Tissue Plasminogen Activator (tPA) protein has three N-glycan sites, which modulate its biodistribution, clearance and functional properties. Describe the methods you would use to determine the type, number and structural composition of the N-glycans present on a recombinant tPA.
3. Discuss the apparent role of gastrin gene products in the promotion of growth of gastrointestinal cancers and outline a research strategy for the development of peptide-based drugs for the treatment of these cancers.

P.T.O.

Section B

4. Discuss the use of positional cloning to map and clone inherited disease genes.
5. Discuss the use of protein engineering techniques to investigate protein structure and function.
6. Write on the principles and applications of gel electrophoresis.