

OLLSCOIL NA hÉIREANN, GAILLIMH
NATIONAL UNIVERSITY OF IRELAND, GALWAY

SUMMER EXAMINATION 1999/2000

B.Sc. (Hons.) in Microbiology

Unit 12

Genetics and Biotechnology of Industrial Bacteria

EXTERN EXAMINER: Professor C M Brown

INTERN EXAMINER: Internal Examiners

TIME ALLOWED: 1½ hours

(INDICATE CLEARLY THE QUESTIONS ANSWERED ON THE FIRST
PAGE OF YOUR ANSWER BOOK)

Please Answer **TWO** Questions

1. Discuss, using examples, the methods and problems involved in the use of recombinant DNA technology to increase the production of proteins in bacteria.
2. Describe the techniques used to produce proteins with improved properties in bacteria, and the difficulties and limitations involved with these techniques. Use examples that you have studied.
3. Bacteria can be engineered for use as “cell factories” for the production of commercially useful products other than proteins. Discuss, giving examples, some ways in which this can be achieved.
4. Write notes on **two** of the following topics:
 - (i) Engineering of *B. thuringiensis* insecticidal toxin genes
 - (ii) Biocontrol of pathogens by plant-growth promoting bacteria
 - (iii) The *Agrobacterium tumefaciens* Ti-plasmid vector.