

Ollscoil na hÉireann, Gaillimh
National University of Ireland, Galway

GX 2264

Semester I Examinations, 2003/2004

Exam Code(s)	<u>3EV1</u>
Exam(s)	<u>3rd Year B.Sc. (Environmental Science)</u>
Module Code(s)	<u>MI318</u>
Module(s)	<u>Environmental Microbiology I</u>
Paper No.	<u>I</u>
Repeat Paper	<u></u>
External Examiner(s)	<u>Dr. Peter D. Moore</u>
Internal Examiner(s)	<u>Professor E. Colleran</u>

Instructions:

Answer THREE Questions

Please indicate clearly the numbers of the questions answered on the first page of your Answer Book

Duration	<u>2 Hrs</u>
No. of Answer books	<u></u>

Requirements:

Handout	<u></u>
MCQ	<u></u>
Statistical Tables	<u></u>
Graph Paper	<u></u>
Log Graph Paper	<u></u>
Other Material	<u></u>

No. of Pages	<u>2</u>
Department(s)	<u></u>

- Q.1** Critically discuss the composition, structure and function of the cell membrane in eubacteria (20 marks).
- Q.2** Describe and discuss the function of pili, fimbriae and flagella in eubacteria (20 marks).
- Q.3** Critically discuss the effect of pH and oxygen concentration on growth of microorganisms in different environments (20 marks).
- Q.4** (a) Describe what you understand by the term "batch fermentation" (5 marks)
(b) Discuss the various stages involved in a batch fermentation (15 marks)
- Q.5** Write notes on any two of the following:-
- (i) The role of high energy compounds such as ATP, in metabolism (10 marks)
 - (ii) The role of redox compounds in oxidation/reduction reactions in bacterial metabolism (10 marks)
 - (iii) Discuss the role of enzymes as biological catalysts
- Q.6** (a) Distinguish between fine and coarse control of enzymes in microbial cells (5 marks)
(b) Describe the operation and discuss the advantages of fine control systems (15 marks)
- Q.7** (i) Describe the main characteristics of a bacterial/yeast fermentation pathway (5 marks)
(ii) Describe the mixed-acid fermentation pathway, focussing only on the post-glycolysis steps and comment on the medical/public health significance of this pathway (15 marks)