



## **Semester I Examinations 2007 / 2008**

<b>Exam Code(s)</b>	3BS9
<b>Exam(s)</b>	3rd Year Science Examination
<b>Module Code(s)</b>	MI316
<b>Module(s)</b>	Industrial and Environmental Microbiology
Paper No.	1
External Examiner(s)	Professor Geoffrey McMullan
Internal Examiner(s)	Professor Peter Smith Dr. Thomas Barry

### **Instructions: Answer 5 Questions**

**Please indicate clearly the numbers of the questions answered on the first page of your answer book**

<b>Duration</b>	3 Hours
<b>No. of Pages</b>	1
<b>Department(s)</b>	Microbiology
<b>Requirements</b>	None

- Q1.** Compare and contrast the use of crude and defined media for industrial Bioprocesses.
- Q2.** Discuss the use of ionizing radiation as a commercial sterilization process. Why do most manufacturers prefer radiation sterilization to the use of ethylene oxide?
- Q3.** Describe the contribution made by yeast cells to the brewing process. In your answer outline the biochemical process that leads to the production of ethanol.
- Q4.** Outline the differences between a food intoxication and a toxicoinfection. Use examples to support your answer.
- Q5.** “Water can act as a vector for disease-causing microorganisms.” Discuss.
- Q6.** Describe the current model for the formation of a bacterial biofilm, using experimental examples to illustrate your answer. In your answer, briefly indicate the significance of biofilms in relation to human health.
- Q7.** Write an essay on “The epidemiology of an infectious disease of your choice”.
- Q8.** Write an essay on “Some of the strategies available for controlling infectious diseases in populations”.



## Semester II Examinations 2007/2008

Exam Code(s)	<b>3BS9</b>
Exam(s)	<b>3rd Year Science Examination</b>
Module Code(s)	<b>MI317</b>
Module(s)	<b>Molecular and Cellular Microbiology</b>
Paper No.	<b>1</b>
Repeat Paper	<b>Special Paper</b>
External Examiner(s)	<b>Professor G. McMullan</b>
Internal Examiner(s)	<b>Professor P. Smith</b> <b>Dr. T. Barry</b>

**Instructions:**      **Answer 5 Questions**

**Please indicate clearly the numbers of the questions answered on the first page of your answer book**

**3 Hours**

***Duration***

No. of Pages	<b>Cover Page + 1</b>
Department(s)	<b>Microbiology</b>
Course Co-ordinator(s)	<b>Dr. Thomas Barry (Ext. 3189)</b>

- Q1.** Describe those mechanisms by which an animal cell can acquire an active oncogene that do not involve infection by a virus.
- Q2.** Write an essay on “Mutation in Bacteria with reference to Induction, Selection and Uses”.
- Q3.** Write an essay describing “The role of T cells in cell-mediated immunity”. Include in your answer their properties, types and functions.
- Q4.** Write brief descriptive notes on **two** of the following antibody-based tests:
- (a) Agglutination tests
  - (b) Complement fixation tests
  - (c) Immunomicroscopy
- Q5.** Describe how you would generate both a genomic library and a cDNA library. In your answer make it clear you know what each is and how they differ.
- Q6.** “Hybridisation is the basis of many of the techniques used in recombinant nucleic acid technologies”. Discuss.
- Q7.** Describe the biochemical pathways associated with the anaerobic catabolism of amino acids in bacteria.
- Q8.** Write an essay on “The anaplerotic mechanisms utilized by bacteria to replenish intermediates of biochemical pathways”.



## AUTUMN EXAMINATION 2007/2008

**Exam Code(s)** 3BS9

**Exam(s)** 3rd Year Science Examination

**Module Code(s)** MI316

**Module(s)** Industrial and Environmental Microbiology

**Paper No.** 1

**Repeat Paper** Special Paper

**External Examiner(s)** Professor G. McMullan

**Internal Examiner(s)** Professor P. Smith  
Dr. T. Barry

**Instructions:** **Answer 5 Questions**

**Please indicate clearly the numbers of the questions answered on the first page of your answer book**

***Duration*** 3 Hours

***No. of Pages*** Cover Page + 1

**Department(s)** Microbiology

**Course co-ordinator** Dr. Thomas Barry

- Q1.** Write a short essay entitled “The microbiology of cheese production”.
- Q2.** Food-borne intoxications can be caused either by bacteria or fungi. Discuss this statement with reference to one bacterial agent and one fungal agent.
- Q3.** Discuss the use of ionizing radiation as a commercial sterilization process. Why do most manufacturers prefer radiation sterilization to the use of ethylene oxide?
- Q4.** Describe the current model for the formation of a bacterial biofilm, using experimental examples to illustrate your answer. In your answer, briefly indicate the significance of biofilms in relation to human health.
- Q5.** Write an essay on "Media for Industrial Fermentations"
- Q6.** Write an essay on practical approaches to the sterilisation of large volumes of thermolabile liquids
- Q7.** Write an essay on the epidemiology of an infectious disease of your choice.
- Q8.** How useful is it to state that a bacterium is the cause of an infectious disease.



## Autumn Examination 2007/2008

<b>Exam Code(s)</b>	<b>3BS9</b>
<b>Exam(s)</b>	<b>3rd Year Science Examination</b>
<b>Module Code(s)</b>	<b>MI317</b>
<b>Module(s)</b>	<b>Molecular and Cellular Microbiology</b>
<b>Paper No.</b>	<b>1</b>
<b>Repeat Paper</b>	<b>Special Paper</b>
<b>External Examiner(s)</b>	<b>Professor G. McMullan</b>
<b>Internal Examiner(s)</b>	<b>Professor P. Smith</b>
	<b>Dr. T. Barry</b>

**Instructions:**                      **Answer 5 Questions**

**Please indicate clearly the numbers of the questions answered on the first page of your answer book**

<b><i>Duration</i></b>	<b>3 Hours</b>
<b>No. of Pages</b>	<b>Cover Page + 1</b>
<b>Department(s)</b>	<b>Microbiology</b>
<b>Course Co-ordinator(s)</b>	<b>Dr. Thomas Barry (Ext. 3189)</b>

- Q1.** Write an essay entitled “Antigens and Antibodies – Structure and Properties”. Include in your answer a description of each of the five immunoglobulin classes.
- Q2.** Write an essay entitled “Hypersensitivity – the immune system in chaos”.
- Q3.** Write an essay entitled “Viruses and Human Cancer”.
- Q4.** Discuss how conjugation may be used in Gene Mapping in *E.coli*.
- Q5.** Describe how you would generate both a genomic library and a cDNA library. In your answer make it clear you know what each is and how they differ.
- Q6.** “Hybridisation is the basis of many of the techniques used in recombinant nucleic acid technologies”. Discuss.
- Q7.** Describe the biochemical pathways associated with the anaerobic catabolism of amino acids in bacteria.
- Q8.** Write an essay on the anaplerotic mechanisms utilized by bacteria to replenish intermediates of biochemical pathways.