

**Semester II Examinations, 2003/2004**

Exam Code(s)	2BV121 & IE2
Exam(s)	2BV121 - Second University Examination in Engineering (Environmental) & IE2 - Second University Examination in Science (Health and Safety Systems)
Module Code(s)	MI450
Module(s)	Sanitary Microbiology
Paper No.	I
Repeat Paper	Special Paper
External Examiner(s)	Professor C.M. Brown
Internal Examiner(s)	Professor E. Colleran Dr. V. O'Flaherty

**Instructions:**

Answer 5 Questions

Indicate clearly the questions answered on the first page of your answer book.

Duration 3 hrs  
No. of Answer books 1

**Requirements:**

Handout  
MCQ  
Statistical Tables  
Graph Paper  
Log Graph Paper  
Other Material

No. of Pages 3  
Department(s)

- Q1. Write short descriptive notes on **THREE** of the following:
- i. Prokaryotic vs eukaryotic cells
  - ii. The bacterial Gram Stain
  - iii. The Growth Curve
  - iv. Complex vs. defined media
  - v. The sulphur cycle
- Q2. Write an essay entitled 'The Carbon Cycle'.
- Q3. Write notes on **TWO** of the following:
- i. The effect of water activity on microbial growth
  - ii. The use of heat in the control of microbial growth
  - iii. Antibiotics and bacterial resistance
- Q4. Write an essay on "The impact of micro-organisms on humans".
- Q5. Write notes on **THREE** of the following:
- i. BOD, COD and the problems associated with untreated waste discharge
  - ii. Aerobic waste and wastewater treatment
  - iii. The different stages of sewage treatment
  - iv. Psychrophilic anaerobic digestion
  - v. Trickling filters
  - vi. Traditional and modern methods for the biomonitoring of anaerobic biological reactors.

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**Q6.** Write notes on **TWO** of the following:

- i. Bacterial indicator organisms and the different methods used for the detection of these organisms in water;
- ii. The biological conversion of MSW and gas recovery from landfills;
- iii. The microbiology, design and operation of secondary sewage treatment plants;
- iv. Biofilms and wastewater treatment.

**Q7.** Methanogenesis is a naturally occurring microbiological phenomenon, which offers applications for environmental conservation. Discuss.

**Q8.** Write an essay on “Water-associated diseases and water-borne pathogens”.