

**NATIONAL UNIVERSITY OF IRELAND, GALWAY  
OLLSCOIL NA hÉIREANN, GAILLIMH**

**SUMMER EXAMINATIONS 1999/2000**

**The B.E. Examination in Engineering (Environmental) Summer  
Semester II**

**External Examiner: Professor C M Brown**

**Internal Examiner: Professor J A Houghton**

**Time allowed: 3 Hours**

**Advanced Sanitary Microbiology**

**Answer FIVE Questions**

1. Write an essay on "Anaerobic Digestion Microbiology".
2. Describe the activated sludge process, the factors affecting operation and performance of these systems and the different modes of operation of activated sludge plants.
3. Write notes on TWO of the following:
  - (i) Disinfection with chlorine
  - (ii) Indicator organisms
  - (iii) Trickling filters
4. Write notes on THREE of the following:
  - (i) Drinking water regulations
  - (ii) Nitrogen removal from wastewaters
  - (iii) Fluidised-bed systems
  - (iv) Sand filters

**- Continued -**

5. Write an essay on "The Treatment and Disposal of Municipal Solid Waste".
6. Discuss the public health aspects of water microbiology.
7. Write an essay on household and small-scale treatment systems.
8. Write notes on **THREE** of the following:
  - (i) Biological Phosphate removal
  - (ii) Waste stabilisation ponds
  - (iii) Rotating Biological Contactors
  - (iv) The use of reed beds for wastewater treatment