

**OLLSCOIL NA hÉIREANN, GAILLIMH****SEMESTER 1 EXAMINATIONS 1999****4th year Environmental Science B.Sc. Hons****Environmental Microbiology and Waste Management****EXTERN EXAMINER: Professor B. Wood****INTERN EXAMINER: Professor E. Colleran****TIME ALLOWED: 3 HOURS****ANSWER ANY THREE QUESTIONS**

**(Indicate clearly the questions answered on the first page of your answer book)**

**Q1** "According to EU legislation, the number and complexity of unit processes required to produce potable water are defined by the initial quality of the raw source water." Discuss this statement and briefly describe the various processes required for each class of source water.

**Q2** Discuss the role played by aerobic activated sludge systems in the overall treatment of domestic sewage to secondary discharge standards.

**Q3** Discuss the role played by septic tanks in the treatment of sewage from single houses, small communities, institutions, etc. in Ireland. Comment critically on problems encountered with their operation and on how these problems can be alleviated.

OR

Critically discuss the increasing use of reed-beds for domestic sewage treatment.

**Q4** Discuss the environmental problems associated with the discharge of raw or partially treated, phosphate-containing wastewaters to receiving waterbodies. Describe the chemical and biological processes currently used for phosphate removal from wastewaters.

**Q5** Discuss the advantages, disadvantages and problems associated with the landspreading of sewage sludge in agriculture.

**Q6** (a) Describe the process of anaerobic digestion of organic compounds, illustrating its advantages and disadvantages versus aerobic decomposition.  
(b) Discuss the application of anaerobic digestion to sewage sludge treatment.