

National University of Ireland, Galway  
OLLSCOIL NA hÉIREANN, GAILLIMH

SUMMER EXAMINATIONS 2000

**Earth's Physical Resources, ER301**

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Time allowed : Three hours

Answer 4 questions. *One* from each section, i.e. Section A, Section B, Section C & Section D.

**SECTION A: RESOURCES, RESERVES AND FOSSIL FUELS**

1. What is the Malthusian perspective on resources? Name two commodities that approximate this trend and describe their occurrence.
2. Using diagrams, illustrate the exploration methods used in the search for oil.

**SECTION B: ALTERNATIVE ENERGY SOURCES**

3. In respect of Nuclear energy explain what is meant by four of the following terms:

Radioactive isotope; half-life of a nuclide; fissile; nuclear cross section; thermal neutrons; fast fission.

Explain the principle of operation and the function of the principal parts of a nuclear power reactor.

Summarise the main advantages and disadvantages of using nuclear fission reactors for the generation of electricity on a wider scale than at present.

4. Summarise the main advantages and disadvantages of renewable energy in comparison to traditional fossil fuel energy resources.

Outline the principal pathways of energy through the atmosphere and describe the earth's energy balance.

Describe briefly the ways in which either wind energy or solar energy can be utilised, mentioning the advantages and disadvantages of the method you have described.

### **SECTION C: WATER RESOURCES AND BUILDING MATERIALS**

5. What conditions are required for water to be termed a renewable AND sustainable resource? Define all terms you use. Give three reasons why the majority of the earth's water is unavailable as a resource.
6. Describe the use of geological materials for construction in terms of the rock cycle.

### **SECTION D: ECONOMIC MINERALS**

7. Describe, using diagrams and examples where appropriate, the relationship between residual and placer deposits.
8. Describe the availability and geological location of both;
  - a) Irelands mineral and rock resources, and
  - b) Irelands natural energy resources