

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.

Answer four questions – one from each section (45 minutes per question).

Section A: Resources, reserves and fossil fuels

1. 'Resources will be available as long as there is demand.' Discuss this statement. Define all terms you use.
2. Economic Coal Deposits. Describe briefly the four main requirements for their formation and their environment of deposition with resulting cyclic sedimentation.

Section B: Alternative Energy Sources

3. Describe the general characteristics of a renewable energy resource in comparison to a conventional fossil fuel energy source. Describe the technical options, advantages and disadvantages of the exploitation in Ireland of either: (a) Wind as a source of electricity or (b) Passive solar energy for domestic space and water heating.

4. Describe the physical basis of nuclear fission as a source of electrical energy. Describe the mode of action of a nuclear reactor, explaining briefly the functions of the principal parts. Describe briefly the fuel cycle options and the options for the disposal of radioactive waste available to a nuclear power reactor operator.

Section C: Water resources and building materials

5. Give three reasons why the majority of the earth's water is unavailable as a resource. Describe the geological controls on the flow of freshwater above and below the ground's surface. What methods are available for groundwater exploration? What are the limitations on groundwater abstraction?
6. Describe the use of sedimentary rocks in the construction industry.

Section D: Economic Minerals.

7. Compare and contrast Irish-type mineralization with Cornish-type mineralization in terms of the geological environment and resulting mineral compositions.
8. Describe, using diagrams and examples where appropriate, the formation, occurrence, exploration and production of diamonds.