

National University of Ireland, Galway
OLLSCOIL NA hÉIREANN, GAILLIMH

SUMMER EXAMINATIONS 1999

2nd SCIENCE
GEOLOGY

PAPER ONE

Prof. B.P.J. Williams
Prof. P.D. Ryan
Dr. M. Feely
Ms. E. Sweeney

Time allowed: Three hours

Answer four questions: **two** from Section A and **two** from Section B.

Allow about 45 minutes for each question.

Please use separate Answer Books for each section.

Illustrate your answers with neat sketches and diagrams where appropriate.

SECTION A

1. Write short notes on four of the following:
 - (i) Apparent Dip Vs True Dip
 - (ii) Magnetic North Vs True North
 - (iii) Bedding and Stratigraphy
 - (iv) Way up Indicators
 - (v) Dip and Strike
 - (vi) True thickness Vs vertical thickness
2. Describe, using diagrams, the different fault types. How are such faults recognised on a geological map?
3. Explain, with sketches, why unconformable layers occur in the stratigraphic record. Describe the 3 types of angular unconformity.
4. Describe, using sketches, the different types of igneous intrusions. How would one classify the Galway Granite?
5. **Either** write an illustrated essay on the driving forces of plate tectonics
or
Give an account of the geological characteristics of the different types of destructive plate margins.

SECTION B

6. Write short notes on the following:
 - (a) Space lattices
 - (b) Symmetry elements
 - (c) Miller indices
 - (d) Crystal zones
7. Write short notes on the following silicate groups, paying particular attention to variations in atomic structure and chemistry:
 - (a) Feldspar Group and
 - (b) Pyroxene Group
8. Show how the common igneous rocks (both plutonic and volcanic types) can be classified using their mineralogical compositions.
9. List the main characteristics that serve to distinguish between contact metamorphism and regional metamorphism.