

## **Syllabus for Geology examination**

The paper will offer a choice of about ten questions from which five must be answered. Candidates will be given credit for citing examples, where relevant, of geological features they have observed in the field. Credit will also be given for appropriate, clear illustrations.

### **General geology**

The concept of, and evidence for, the layered structure of the Earth. The theory of plate tectonics and its bearing on the origin of earthquakes, volcanoes, mountain belts, and rift valleys.

### **Surface processes**

Weathering and its dependence on climate and rock type. Erosion, transport and deposition in fluvial, marine, aeolian, and glacial environments, with emphasis on the development of the Irish landscape. The features of ancient sedimentary rocks from which their depositional environment and way-up can be inferred. The hydrological cycle.

### **Earth materials**

The composition and occurrence of the following minerals, and the diagnostic features sufficient to distinguish between them (without use of a microscope): quartz, feldspar, augite, hornblende, mica, olivine, garnet, calcite, galena, sphalerite, pyrite, chalcopyrite, magnetite, hematite, limonite, malachite, fluorspar, barytes, gypsum, halite

The characteristic features, occurrence and origin of the following common rocks: gabbro, dolerite, basalt, andesite, granite, rhyolite, obsidian, pumice, tuff, agglomerate; gneiss, schist, slate, quartzite, marble, mylonite, hornfels; conglomerate, breccia, sandstone, greywacke, shale, mudstone, limestone, coal, chert. Irish mineral resources. Energy resources.

### **The geometry of rock bodies**

Folds and faults. Cleavage and its relationship to folding. Joints

Candidates should be able to draw and interpret simple block diagrams and maps showing unconformities, dipping strata, folded strata, faulted strata, batholiths, dykes and sills.

### **Earth history**

The principles of radiometric dating of minerals. The subdivision of geological time. The origin and age of the Earth. The law of superposition and the principles of stratigraphic correlation. An outline of the geological history of Ireland and Britain, including periods of orogenesis, major unconformities, and changing environments of sedimentary deposition.

### **Ancient life**

The origin, evolution and extinction of organisms. A broad outline of vertebrate evolution including the appearance of man. Modes of preservation and fossilisation

potential of different organisms. Fossils as rock builders and environmental indicators. Corals, brachiopods, bryozoans, molluscs (bivalves, gastropods, cephalopods), echinoderms (echinoids, crinoids), trilobites and graptolites: – those morphological features characterising their taxonomic class and approximate geological age. The use of microfossils in oil exploration.