

## 5<sup>th</sup> Year Revision List

### 1. Plate Tectonics

- **Theory of Plate Tectonics:**
  - **Alfred Wegener's Theory of Continental Drift:** Pangaea and evidence supporting continental drift (e.g., fossil evidence, geological fit)
  - **Arthur Holmes' Convection Currents Theory:** Role of convection currents in mantle
- **Structure of the Earth:**
  - Layers: crust (oceanic and continental), mantle, outer core, inner core
  - Asthenosphere and lithosphere
- **Types of Plate Boundaries:**
  - **Destructive (Convergent):** Subduction zones (e.g., Nazca Plate and South American Plate)
  - **Constructive (Divergent):** Mid-ocean ridges (e.g., Mid-Atlantic Ridge)
  - **Conservative (Transform):** Fault lines (e.g., San Andreas Fault)
- **Processes at Plate Boundaries:**
  - Sea-floor spreading, subduction, volcanic activity, earthquakes
- **Hotspots:**
  - How hotspots (e.g., Hawaiian Islands) form in the middle of tectonic plates

### 2. Volcanoes

- **Volcanic Activity and Plate Boundaries:**
  - Where and why volcanoes form (at destructive and constructive boundaries, hotspots)
  - **Examples:** Ring of Fire, Iceland, Mount Vesuvius
- **Types of Volcanoes:**
  - **Shield Volcanoes:** Gentle slopes, formed from runny basaltic lava (e.g., Mauna Loa)
  - **Composite Volcanoes (Stratovolcanoes):** Steep slopes, formed from alternating layers of lava and ash (e.g., Mount St. Helens)
  - **Cinder Cones:** Small, steep-sided, formed from explosive eruptions
- **Volcanic Features:**
  - Magma chamber, vent, crater, caldera, fumaroles
- **Volcanic Hazards:**
  - Pyroclastic flows, lahars, ash clouds, volcanic gases, lava flows
  - **Case Studies:** Mount Pinatubo (1991), Mount Etna (ongoing activity)
- **Impacts of Volcanic Activity:**
  - **Positive:** Fertile soils, geothermal energy, tourism, mineral resources
  - **Negative:** Loss of life, destruction of property, climate impact (e.g., ash clouds blocking sunlight)

### 3. Earthquakes

- **How Earthquakes Occur:**
  - Stress buildup along faults, release of energy, seismic waves
  - Plate boundaries associated with earthquakes (destructive and conservative boundaries)

- **Focus and Epicentre:**
  - Difference between focus (where earthquake begins underground) and epicentre (directly above on the surface)
- **Seismic Waves:**
  - Primary waves (P-waves), secondary waves (S-waves), surface waves
- **Measuring Earthquakes:**
  - **Richter Scale:** Measures magnitude (energy released)
  - **Mercalli Scale:** Measures damage (intensity)
- **Earthquake Effects:**
  - Primary effects: ground shaking, buildings collapsing
  - Secondary effects: tsunamis, fires, landslides
  - **Case Study:** 2011 Japan Earthquake and Tsunami
- **Earthquake Prediction and Preparation:**
  - Early warning systems, building design (e.g., earthquake-resistant structures), emergency drills

#### 4. Fold Mountains

- **Formation of Fold Mountains:**
  - Formed at **destructive (convergent) plate boundaries** where two plates collide and sedimentary rock layers are folded
  - **Anticlines** (upfolds) and **synclines** (downfolds)
  - Compression forces over millions of years
- **Stages of Mountain Building:**
  - **Caledonian Folding:** Oldest (400 million years ago, e.g., Dublin-Wicklow Mountains)
  - **Armorican Folding:** Middle (250 million years ago, e.g., Macgillycuddy's Reeks)
  - **Alpine Folding:** Youngest (35 million years ago, e.g., Alps, Himalayas)
- **Examples of Fold Mountain Ranges:**
  - **Alps** (Europe), **Andes** (South America), **Rockies** (North America), **Himalayas** (Asia)
- **Impact of Fold Mountains on Human Activity:**
  - Economic activities (e.g., tourism, farming, mining)
  - Challenges: difficult transport, avalanches, isolation, low agricultural productivity
  - **Case Study:** The Alps (importance for tourism, challenges of living in mountainous regions)

#### 5. Rocks

- **The Rock Cycle:**
  - Relationship between igneous, sedimentary, and metamorphic rocks
  - Processes involved: weathering, erosion, compaction, heat, pressure, melting
- **Types of Rocks:**
  - **Igneous Rocks:** Formed from cooling magma or lava
    - **Intrusive (Plutonic):** Slow cooling underground (e.g., granite)
    - **Extrusive (Volcanic):** Fast cooling on the surface (e.g., basalt)
  - **Sedimentary Rocks:** Formed from compressed sediments

- **Organic sedimentary rocks:** Limestone (formed from marine organisms)
    - **Inorganic sedimentary rocks:** Sandstone, shale
  - **Metamorphic Rocks:** Formed by heat and pressure altering existing rocks
    - **Contact metamorphism:** Rock changed by heat (e.g., marble from limestone)
    - **Regional metamorphism:** Rock changed by pressure (e.g., slate from shale)
- **Rock Formation Examples:**
  - **Igneous:** Giants Causeway (basalt), Wicklow Mountains (granite)
  - **Sedimentary:** The Burren (limestone)
  - **Metamorphic:** Connemara Marble (marble), Kilkenny Slate (slate)
- **Economic Uses of Rocks:**
  - Building materials (e.g., limestone, granite)
  - Energy (e.g., coal, oil as fossil fuels found in sedimentary rocks)
  - Tourism (e.g., Giant's Causeway)