🌍 Structure of Earth – SSC Notes

1. Definition of Earth

- **Earth: Third planet from the Sun, spherical in shape, supports life, composed of land, water, atmosphere**
- **Importance: Provides habitat, water, minerals, climate, and resources**

2. Layers of Earth

Earth has four main layers, differentiated by composition & physical properties:

A. Crust

- **Outermost layer**
- **Thickness: 5–70 km → Thinner under oceans, thicker under continents**
- **Composition: Silicates → Granite (continental), Basalt (oceanic)**
- **Features: Lithosphere → Includes crust + upper mantle**
- **Supports landforms, mountains, soil, human activities**

B. Mantle

- **Located beneath crust → 2900 km thick**
- **Composition: Silicates rich in iron & magnesium**
- **Subdivisions:**
  1. **Upper Mantle → Solid, but partially molten → Convection currents → Plate movement**
  2. **Lower Mantle → Denser, solid**

C. Outer Core

- **Composition: Liquid iron & nickel**
- **Thickness: ~2200 km**
- **Responsible for Earth's magnetic field → Geodynamo effect**

D. Inner Core

- **Composition: Solid iron & nickel**
- **Radius: ~1200 km**
- **Temperature: ~5000–6000°C**
- **Generates Earth's internal heat**

3. Physical Layers of Earth

Layer	Depth / Features
Lithosphere	Crust + upper mantle → Tectonic plates, rigid
Asthenosphere	Upper mantle → Semi-molten, allows plate movement
Mesosphere	Lower mantle → Solid, high pressure
Outer Core	Liquid → Generates magnetic field
Inner Core	Solid → Iron-nickel, very hot

4. Important Geological Features

- Tectonic Plates → 7 major + several minor → Drift → Earthquakes & Volcanoes
- Continental Drift Theory → Alfred Wegener → Pangaea → Plate tectonics
- Earthquakes → Movement of crust → Seismic waves
- Volcanoes → Magma eruption → Formation of mountains & islands

5. Important SSC Points – Structure of Earth

- Earth → Crust, Mantle, Outer Core, Inner Core
- Crust → Continental (granite), Oceanic (basalt)
- Mantle → Upper (partially molten), Lower (solid)
- Outer Core → Liquid, iron & nickel → Magnetic field
- Inner Core → Solid, iron & nickel → High temperature
- Lithosphere → Rigid, tectonic plates → Earthquakes & Volcanoes
- Convection currents in mantle → Plate movement