🌬️ Atmosphere – SSC Notes

1. Definition of Atmosphere

- **Atmosphere: Layer of gases surrounding the Earth, held by Earth's gravity**
- **Importance:**
  - **Protects life → Blocks harmful solar radiation**
  - **Provides oxygen & carbon dioxide**
  - **Helps in weather, climate, rainfall**

2. Composition of Atmosphere

Gas	Percentage	Function / Importance
Nitrogen (N_2)	78%	Reduces combustibility, maintains pressure
Oxygen (O_2)	21%	Respiration, combustion
Argon (Ar)	0.93%	Inert gas
Carbon Dioxide (CO_2)	0.03%	Photosynthesis, greenhouse effect
Trace Gases	Neon, Helium, Methane, Ozone	Ozone → UV protection, Methane → Greenhouse gas
Water Vapour	0–4%	Clouds, precipitation, humidity

3. Layers of Atmosphere

Layer	Altitude	Temperature Trend	Features
Troposphere	0–12 km	Decreases with height	Weather occurs, clouds, planes fly
Stratosphere	12–50 km	Increases with height	Contains Ozone Layer → UV protection
Mesosphere	50–80 km	Decreases with height	Meteors burn, coldest layer
Thermosphere / Ionosphere	80–700 km	Increases	Northern lights (Aurora), radio waves reflect
Exosphere	700–10,000 km	Very high, merges into space	Outermost layer, satellites orbit

4. Important Phenomena Related to Atmosphere

1. **Greenhouse Effect → Traps heat → Maintains Earth's temperature**
2. **Ozone Layer → Absorbs harmful UV radiation → Protects life**
3. **Aurora → Northern & Southern lights → Interaction of solar wind & magnetic field**
4. **Atmospheric Pressure → Decreases with height → Impacts weather**
5. **Wind Formation → Air moves from high pressure → low pressure → Drives weather & monsoon**

5. Important SSC Points – Atmosphere

- **Atmosphere → Nitrogen 78%, Oxygen 21%, Argon 0.93%, CO_2 0.03%**
- **Troposphere → Weather & clouds**
- **Stratosphere → Ozone layer → UV protection**
- **Mesosphere → Meteors burn**
- **Thermosphere → Ionosphere, auroras, radio waves**
- **Exosphere → Outermost, satellites orbit**
- **Greenhouse effect → Maintains warmth, but excess → Global warming**

- **Wind → Air movement → High pressure → Low pressure**