TD°02 : Introduction to Bioclimatology

1. Which of the following is **not** a mission of a climatological service?
a) Collecting meteorological data
b) Processing and archiving data
c) Managing climatological networks
d) Controlling industrial pollution

2. The layer of the atmosphere that contains **most of the water vapor and weather phenomena** is:
a) Stratosphere
b) Troposphere
c) Mesosphere
d) Thermosphere

3. The **boundary between the troposphere and stratosphere** is called the:
a) Mesopause
b) Tropopause
c) Stratopause
d) Thermopause

4- The cooling of air leads to:
a) an increase in humidity b) a decrease in humidity c) condensation

5- Temperatures in the troposphere:
a) decrease with increasing altitude down to about –100°C.
b) decrease with increasing altitude at a rate of 0.6°C per 100 meters.

- **True or False**

- The missions of a climatological service include international collaboration in research.
- The troposphere extends up to 50 km altitude.
- The thermosphere has very high temperatures because the air density is high.
- Ozone concentration is highest in the stratosphere.
- About 75% of the atmosphere's mass is contained in the troposphere.

- **Fill the blank**

- The lower part of the thermosphere is called the **……..**
- The upper boundary of the stratosphere is known as the **……..**
- The two main gases in dry air are **……...(78%)** and **…….(21%)**.
- The vertical structure of the atmosphere is defined based on variations in **…….**

- The **……** prevents convection of air beyond the troposphere.

- **Complete the table :**

		Main Differences
Troposphere	Stratosphere	
Dry air	Humid air	
Aerosols	Pollutant gases	

1. Explain why most meteorological phenomena occur in the troposphere.
2. Why is the residence time of particles long in the stratosphere?
3.Why does the temperature increase with altitude in the stratosphere?
4. Among the climatologist's missions, "Archiving data" , briefly explain the methodology followed by the climatologist to accomplish this task.

Exercise:

1- Suppose that in the region of Constantine, the ground temperature is about **18°C**. Calculate the temperature at an altitude of **4,000 meters.**

2- Suppose that in the region of Skikda, the temperature is about **–10°C** at an altitude of **3,000 meters**. Calculate the **temperature at ground level**