

NAME OF THE INSTRUMENT: MAXIMUM AND MINIMUM THERMOMETERS

➤ **MAXIMUM THERMOMETER:**

➤ **PURPOSE OF MEASUREMENT:**

- The maximum air temperature during 24 hrs duration is measured by using a maximum thermometer.

➤ **UNIT OF MAXIMUM TEMPERATURE:**

- Degree Celsius ($^{\circ}\text{C}$)

➤ **LEAST COUNT:**

- 0.5°C

➤ **TIME OF OBSERVATION:**

- 07:18 hrs and 14:18 hrs

➤ **DETAILS OF EQUIPMENT:**

- Maximum thermometer is a mercury-in-glass thermometer provided with a constriction in the capillary of the glass tube below the lowest graduation of the scale.
- Maximum thermometer ranging from -35°C to $+55^{\circ}\text{C}$.

➤ **PRINCIPLE:**

- The Constriction allows the mercury to be forced by rising temperature but restricts it being drawn back with falling temperature.
- It stands at the level in the capillary, so that we can note the maximum temperature at a later time.



➤ **SETTING OF INSTRUMENT:**

- The thermometer is to be set at 07:18 hrs.
- Giving mechanical jerks holding by hand, sets the thermometer.
- The reading of the maximum thermometer after setting should agree with that of dry bulb thermometer within 0.3°C .

➤ **MINIMUM TEMPERATURE:**

➤ **PURPOSE OF MEASUREMENT:**

- The minimum or the lowest temperature of air during last 24 hrs. is measured with the help of a minimum thermometer.

➤ **UNIT OF MAXIMUM TEMPERATURE:**

- Degree Celsius ($^{\circ}\text{C}$)

➤ **LEAST COUNT:**

- 0.5°C

➤ **TIME OF OBSERVATION:**

- 07:18 hrs and 14:18 hrs

➤ **DETAILS OF EQUIPMENT:**

- Minimum thermometer is a spirit or alcohol-in-glass thermometer ranging from -40°C to $+50^{\circ}\text{C}$, having a light narrow index in the stem.
- This index is kept inside the spirit column by surface tension of the meniscus.
- Reading is taken from the end of the index, which is farthest from the bulb.



➤ **PRINCIPLE:**

- As the temperature falls, the alcohol contracts and end of alcohol column in stem moves onwards the bulb dragging the index along with it by the surface tension of liquid.
- If subsequently temperature increases, the alcohol flows freely past the index without displacing it.
- Thus, the position of the end of the index farthest from the bulb indicates the lowest temperature reached since the thermometer was set.

➤ **SETTING OF INSTRUMENT:**

- Minimum thermometer is set at 14:18 hrs by tilting the bulb upwards (jerk is not given).
- After setting, the reading of the minimum thermometer should agree with that of dry bulb thermometer within $\pm 0.6^{\circ}\text{C}$.