

DATE: 16 SEP 2020

SUBJECT : SCIENCE

CHAPTER-7:

TEMPERATURE AND HEAT

TOPIC-2:

THERMOMETER & CLINICAL THERMOMETER

THERMOMETERS & CLINICAL THERMOMETER

Thermometer : The device that is used to measure temperature is called thermometer.

Types: Thermometer is mainly of 03 types.

(a) Clinical thermometer (b) Laboratory thermometer and (c) Maxima-minima thermometer

Clinical thermometer: The thermometer that is used to measure human body temperature is called clinical thermometer.

Construction & working of clinical thermometer: It is made of a narrow capillary glass tube. It has a bulb and body part. Mercury is used in it as liquid and the bulb contains the mercury. Scale is calibrated over the glass tube. Lower limit of temperature is 35°C and upper limit is 42°C . It has a slight bend in the stem just above the bulb. It is called kink or constriction. It prevents the mercury from falling back all by itself.

On heating mercury expands and rises up through the capillary tube. From the scale we can record the reading of temperature.

While taking reading the thermometer is placed under tongue for a few minutes and then taken out and reading is recorded.

Working principle: Liquids expand on heating and contract on cooling.

Uses: It is mainly used to measure human body temperature.

CLINICAL THERMOMETER

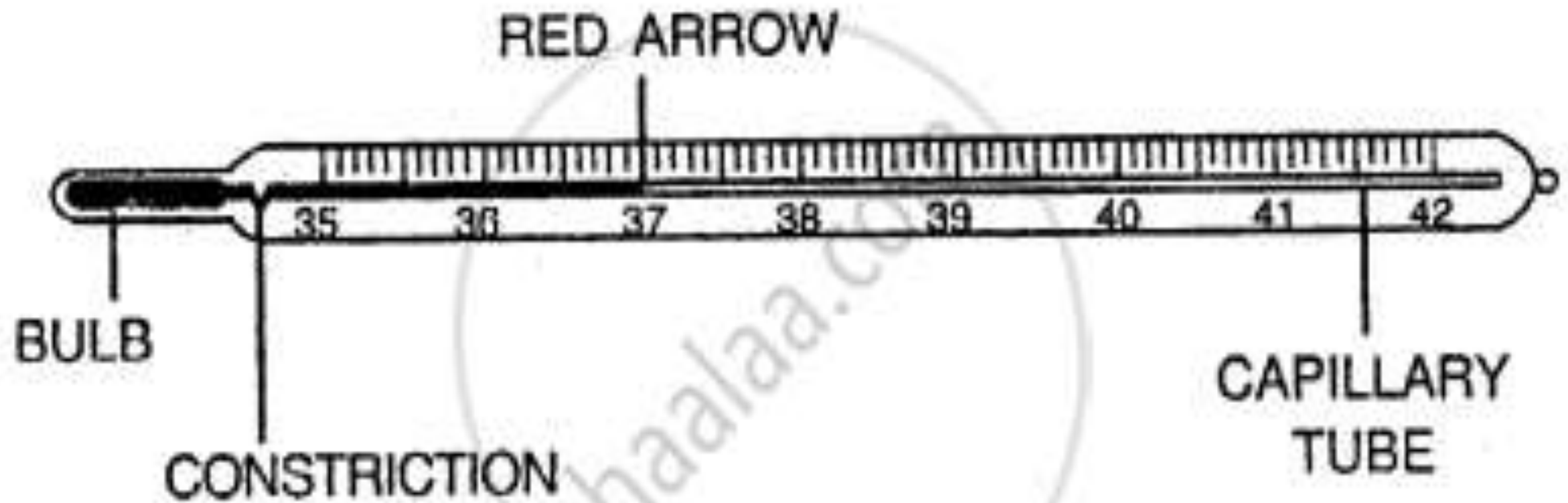


FIG:CLINICAL THERMOMETER

Note : The average body temperature of human body is 37 degree Celsius. Hence the temperature range of clinical thermometer is 35-42 degree Celsius.

CLINICAL THERMOMETER

REASON FOR USING MERCURY AS LIQUID IN THERMOMETER:

1. It is opaque and hence visible through the glass tube.
2. It is good conductor of heat and records even small changes in temperature.
3. It does not stick to glass
4. It has low freezing point and high boiling point and thus it remains in the liquid state over a wide range of temperature

Disadvantage of using mercury: It is a toxic substance which has high risk of use.

NOTE: Alcohol can also be used as liquid in the thermometer. But it can not be used to measure high temperature as its boiling point is lower than that of water.

Precautions to be taken while using clinical thermometer :

1. Clean the thermometer with water and antiseptic before and after use.
2. Do not hold the thermometer and its bulb by hand
3. Do not use thermometer that has crack, since mercury is a toxic substance.
4. Avoid parallax error when you read the temperature reading in the thermometer.

Note : 1. Now a days digital thermometer is used that has sensor and display. The reading of temperature is displayed in number in this thermometer.

2. Digital thermometer is better than mercury used thermometer as digital thermometer does not contain mercury (which is a toxic substance)

QUESTIONS: HOME ASSIGNMENT

1. What do you understand by thermometer?
2. Name the different types of thermometer.
3. What is clinical thermometer? Write its temperature range.
4. What do you mean by kink? Write its function.
5. What are the advantages of mercury which is used in thermometer?
6. Can we use alcohol in place of mercury in the thermometer ?
7. What precautions are to be taken while using a clinical thermometer.
8. Write the advantages of digital thermometer over that of mercury glass thermometer.
9. Name places of human body where clinical thermometer is placed to measure body temperature. Give reason for using those places.