



PHYSICS

BOOKS - CHHAYA PHYSICS (BENGALI ENGLISH)

THERMOMETRY

Example

1. What is the temperature which has the same value in Celsius and in Fahrenheit scales?



[Watch Video Solution](#)

2. A thermometer has its lower fixed point and upper fixed point marked as 0.5 and 101 respectively. What is the reading on this thermometer at 30°C .



[Watch Video Solution](#)

3. A faulty thermometer reads -0.5°C in boiling water at the pressure of 747 mm of Hg.

What is the correct temperature when the faulty thermometer reads $45^{\circ}C$? Actual boiling point of water is $99^{\circ}C$ at 734 mm of Hg.



[View Text Solution](#)

4. A centimetre scale is attached with a thermometer of uniform bore. The thermometer reads 7.3 cm in melting ice, 23.8 cm in boiling water and 3.5 cm in a freezing

mixture. What is the temperature of this freezing mixture in $^{\circ}C$?



[Watch Video Solution](#)

5. A substance is heated from $30^{\circ}C$ to $75^{\circ}C$. What is the change in its temperature on the Fahrenheit scale and on the Kelvin scale?



[Watch Video Solution](#)

6. The graph between Celcius and Fahrenheit temperature of a body is shown in the Fig. 4.4.

Show that the angle made by the graph with

Celsius axis is $\sin^{-1} \frac{9}{\sqrt{106}}$.



[View Text Solution](#)

High Order Thinking Skill Hots Questions

1. If a person enters a room at $25^{\circ}C$, will thermal equilibrium be established?



[View Text Solution](#)

2. In winter blankets and quilts warm up after being wrapped around a body. Why?



[View Text Solution](#)

3. When would two chairs, one made of wood and the other of iron, feel equally hot or cold?



[View Text Solution](#)

4. How can a thermometer be used to find out whether the atmospheric pressure is above or below its normal value?



[View Text Solution](#)

5. Is there any thermal equilibrium in the solar system?



View Text Solution

6. What happens when water at $80^{\circ}C$ is mixed with water at $20^{\circ}C$?



Watch Video Solution

7. There are two thermometers in a room. One reads the temperature as 25 degree and the other as 77 degree. Why is this difference?



[Watch Video Solution](#)

Exercise Multiple Choice Questions

1. At the triple point of water the magnitude of pressure is

A. 4.58 mm of Hg

B. 4.57 mm of Hg

C. 4.59 mm of Hg

D. 4.56 mm of Hg

Answer: A



Watch Video Solution

2. The temperature at the triple point of water is

A. 273.16 K

B. $273.16^{\circ} F$

C. $273.16^{\circ} C$

D. 273 K

Answer: A



Watch Video Solution

3. The universally accepted primary thermometer is

A. liquid thermometer

B. platinum resistance thermometer

C. ideal gas thermometer

D. alcohol thermometer

Answer: C



View Text Solution

4. If the difference between two temperatures in Kelvin scale be ΔT and that in Celsius scale be Δt , then-

A. $\Delta T = \Delta t$

B. $\Delta T = \Delta t + 273$

C. $\Delta T = \Delta t - 273$

D. none of the above

Answer: A



Watch Video Solution

5. A centigrade and a Fahrenheit thermometer are dipped in boiling water. Now this water is cooled and the reading on the Fahrenheit

scale $140^{\circ} F$. The decrease in temperature on the Centigrade thermometer is-

A. $30^{\circ} C$

B. $40^{\circ} C$

C. $60^{\circ} C$

D. $80^{\circ} C$

Answer: B



Watch Video Solution

6. A gas thermometer is more sensitive than a liquid thermometer because

- A. expansibility of gas is more than that of a liquid
- B. gas is easily available
- C. gas is comparatively lighter
- D. gas thermometer is the primary thermometer

Answer: A



7. A constant volume gas thermometer shows pressure reading of 50cm of Hg and 90cm of Hg at $0^{\circ}C$ and $100^{\circ}C$ respectively. When the pressure reading is 60cm of Hg, the temperature is

A. $25^{\circ}C$

B. $40^{\circ}C$

C. $15^{\circ}C$

D. $12.5^{\circ}C$

Answer: A



Watch Video Solution

8. On which of the following scales of temperature, the temperature is never negative

A. Celsius

B. Fahrenheit

C. Reaumur

D. Kelvin

Answer: D



View Text Solution

9. Stem correction' in plantium resistance thermometers are eliminated by the use of

A. cells

B. electrodes

C. compensting leads

D. none of the above

Answer: C



View Text Solution

10. The temperature of the sun is measured with

- A. platinum thermometer
- B. gas thermometer
- C. pyrometer
- D. vapour pressure thermometer

Answer: C



View Text Solution

Exercise Very Short Answer Type Questions

1. What is the value of $-273^{\circ}C$ in Kelvin scale?



View Text Solution

2. What is the value of absolute zero temperature on Fahrenheit scale?



[View Text Solution](#)

3. Write down the physical property of a substance that is defined from the zeroth law of thermodynamics.



[View Text Solution](#)

4. If two bodies are in thermal equilibrium, then their temperature must be equal'. State whether the statement is true or false.



[View Text Solution](#)

5. What is the name of the temperature measuring instrument?



[View Text Solution](#)

6. Due to temperature difference only, the energy transferred one body to another is called _____. [Fill in the blank]



[Watch Video Solution](#)

Exercise Problem Set I

1. Which temperature gives equal readings in Fahrenheit and Kelvin scales?



[Watch Video Solution](#)

2. At which temperature the Celsius and Fahrenheit scale readings show a difference of 40 degree?



[Watch Video Solution](#)

3. The lower and the upper fixed points in a thermometer are 0.2 degree and 101.7 degree respectively. What will be the reading on this thermometer at a temperature of $60^{\circ} C$?



[Watch Video Solution](#)

4. One thermometer is graduated in the Celsius scale and another in the Fahrenheit scale. Both of them are used alternately to measure the temperatures of two objects. In both the cases, the differences in reading of the two thermometers are observed to be 20 degree. If the temperature of the objects are different, find their values in the Celsius scale.



Watch Video Solution

5. The fundamental interval of one thermometer is divided into 45 equal divisions while that on another thermometer into 100 equal divisions. The lower fixed point of the first thermometer is -2 degree and that of the other is 20 degree. What will be the reading of the first thermometer when a temperature reads 120 degree on the second thermometer?



Watch Video Solution

6. Temperature of a body increases by 35 degree on the Celsius scale. What will be the increase in temperature on the Fahrenheit scale?



[Watch Video Solution](#)

Exercise Problem Set II

1. A faulty Celsius thermometer reads $1.3^{\circ}C$ in melting ice, but reads $98.5^{\circ}C$ in the water

vapour at a pressure of 747 mm of Hg. When the reading on this faulty thermometer is $20^{\circ}C$, what is the corresponding reading on the Fahrenheit scale? Boiling point of water at a pressure of 734 mm of Hg is $99^{\circ}C$.



[View Text Solution](#)

2. The readings of a mercury thermometer which has a scale marked in millimetres are 10.6 mm and 208.6 mm at the ice point and steam-point respectively. What will be the

reading when the thermometer is in a liquid a

$72^{\circ} F$?



[Watch Video Solution](#)

Entrance Corner Assertion Reason Type

1. Statement I : Fahrenheit is the smallest unit of measuring temperature.

Statement II : Fahrenheit was the first temperature scale used for measuring temperature.

A. Statement I is true, statement II is true ,
statement II is a correct explanation for
statement I.

B. Statement I is true, statement II is true ,
statement II is not a correct explanation
for statement I.

C. Statement I is true, statement II is false.

D. Statement I is false, statement II is true.

Answer: C



View Text Solution

2. Statement I : The temperature at which Centigrade and Fahrenheit thermometers read the same is -40° .

Statement II : There is no relation between Fahrenheit and Centigrade temperature.

A. Statement I is true, statement II is true , statement II is a correct explanation for statement I.

- B. Statement I is true, statement II is true ,
statement II is not a correct explanation
for statement I.
- C. Statement I is true, statement II is false.
- D. Statement I is false, statement II is true.

Answer: C



Watch Video Solution

3. Statement I : Degree Fahrenheit is the smallest unit for measuring temperature.

Statement II : Fahrenheit was the first temperature scale used for measuring temperature.

A. Statement I is true, statement II is true , statement II is a correct explanation for statement I.

B. Statement I is true, statement II is true , statement II is not a correct explanation

for statement I.

C. Statement I is true, statement II is false.

D. Statement I is false, statement II is true.

Answer: C



View Text Solution

4. Statement I : Two bodies at different temperatures, if brought in contact do not necessary settle to the mean temperature.

Statement II : The two bodies may have different thermal capacities.

A. Statement I is true, statement II is true , statement II is a correct explanation for statement I.

B. Statement I is true, statement II is true , statement II is not a correct explanation for statement I.

C. Statement I is true, statement II is false.

D. Statement I is false, statement II is true.

Answer: A



Watch Video Solution

5. Statement I : Water is considered unsuitable for use in thermometers.

Statement II : This is due to small specific heat and high thermal conductivity.

A. Statement I is true, statement II is true , statement II is a correct explanation for statement I.

- B. Statement I is true, statement II is true ,
statement II is not a correct explanation
for statement I.
- C. Statement I is true, statement II is false.
- D. Statement I is false, statement II is true.

Answer: C



Watch Video Solution

Entrance Corner Multiple Correct Answers Type

1. To measure the temperature say around $400^{\circ}C$. Which of the following thermometers can be used most conveniently ?

- A. gas thermometer
- B. mercury thermometer
- C. platinum resistance thermometer
- D. thermocouple thermometer

Answer: A::C::D



Watch Video Solution

2. Reading of temperature may be same on

A. Celsius and Kelvin scale

B. Fahrenheit and Kelvin scale

C. Celsius and Fahrenheit scale

D. all the three scales

Answer: B::C



View Text Solution

3. Which of the following statements are not true ?

A. size of degree is smallest on Celsius scale

B. size of degree is smallest on Fahrenheit scale

C. scale of degree is equal on Fahrenheit and Kelvin scale

D. size of degree is equal on Celsius and Kelvin scale

Answer: A::C



Watch Video Solution

Entrance Corner Comprehension Type

1. Perhaps the highest temperature material you will ever see is the sun's outer atmosphere, or corona. At a temperature of

about $2 \times 10^6^\circ C$ or $3.6 \times 10^6^\circ F$, the corona glows with a light that is literally unearthly. But because corona is also very thin, its light is rather faint. You can only see the corona during a total solar eclipse when the sun's disk is covered by the moon.

Is it accurate to say that the corona contains heat ?

A. yes

B. no

C. in particular conditions, say during solar eclipse, it contains heat

D. none of these

Answer: A



View Text Solution

2. Perhaps the highest temperature material you will ever see is the sun's outer atmosphere, or corona. At a temperature of about $2 \times 10^6 \text{ }^\circ\text{C}$ or $3.6 \times 10^6 \text{ }^\circ\text{F}$, the

corona glows with a light that is literally unearthly. But because corona is also very thin, its light is rather faint. You can only see the corona during a total solar eclipse when the sun's disk is covered by the moon.

What is the highest temperature which can be created on earth for a sufficiently long time ?

A. $1500^{\circ} C$

B. $2000^{\circ} C$

C. $2500^{\circ} C$

D. 3000 K

Answer: D



View Text Solution

3. Perhaps the highest temperature material you will ever see is the sun's outer atmosphere, or corona. At a temperature of about $2 \times 10^6^\circ C$ or $3.6 \times 10^6^\circ F$, the corona glows with a light that is literally unearthly. But because corona is also very thin, its light is rather faint. You can only see the corona during a total solar eclipse when the

sun's disk is covered by the moon.

To measure high temperatures $> 2500^{\circ}C$ we
use

A. constant volume gas thermometer

B. thermocouple

C. resistance thermometer

D. pyrometer

Answer: D



Watch Video Solution

Entrance Corner Integer Type

1. A celsius and a Fahrenheit thermometer are put in a hot bath. The reading of Fahrenheit thermometer is just $\frac{29}{5}$ times the reading on celsius thermometer. What is the temperature of the bath in Celsius ?



[Watch Video Solution](#)

1. Write the zeroth law of thermodynamics.



[Watch Video Solution](#)

2. Zeroth law of thermodynamics gives the concept of

A. pressure

B. temperature

C. heat

D. work

Answer: B



Watch Video Solution

Examination Archieve Wbjee

1. A scientist proposes a new temperature scale in which the ice point is $25X$ (X is the new unit of temperature) and the steam point is $305X$. The specific heat capacity of water in this new scale is (in $J \cdot kg^{-1} \cdot X^{-1}$)

A. 4.2×10^3

B. 3.0×10^3

C. 1.2×10^3

D. 1.5×10^3

Answer: D



Watch Video Solution