PHYSICS

BOOKS - FULL MARKS PHYSICS (TAMIL ENGLISH)

HEAT

Exercise Choose The Correct Answer

1. Calorie is the unit of _____

A. heat

B. work

C. temperature

D. food

Answer: A

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2. SI unit of temperature is

A. fahrenheit

B. joule

C. celsius

D. kelvin

Answer: D

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3. Two cylindrical rods of same length have the area of cross section in the ratio 2:1 rods are made up of same material, which of them conduct heat faster ?

A. Both rods

B. Rod-2

C. Rod -1

D. None of them

Answer: C

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4. In which mode of transfer of heat molecules pass on heat energy to neighbouring without actually moving from their positions?

A. Radiation

B. Conduction

C. Convection

D. Both B and C

Answer: B

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5. A device in which the loss of heat due to conduction, convection and radiation is minimized is _____

A. Solar cell

B. Solar cooker

C. Thermometer

D. Thermos flask

Answer: D

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Exercise Fill In The Blanks

1. The fastest mode of heat transfer is _____

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2. During day time, air blows from _____ to ____

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3. Liquids and gases are generally _____ conductors of heat.

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4. The change of state from solid to gas directly is called _____.

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Exercise Assertion And Reason

1. Assertion (A): Food can be cooked faster in copper bottom vessels

Reason (R): Copper is the best conductor of heat.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false

D. If assertion is false but reason is true

Answer: A

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2. Assertion (A) : Maximum sunlight reaches earth's surface during the afternoon time.

Reason (R) : Heat from the sun reaches earth's surface by radiation.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false

D. If assertion is false but reason is true

Answer: B

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3. Assertion(A) : When water is heated up to $100^{\circ}C$, there is no rise in temperature until all water gets converted into water vapour.

Reason : Boiling point of water is $10^{\circ}C$

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false

D. If assertion is false but reason is true

Answer: C

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Exercise Answer Briefly

1. Define conduction band.

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2. Ice is kept in double-walled container. Why?

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3. How does the water kept in an earthen pot remains cool?

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4. Distinguish between conduction, convection, and rediation.

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5. Why do people prefer wearing white clothes during summer?

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6. Specific heat capacity

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7. Define heat capacity (or) thermal capacity ?

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8. Define specific heat capacity at constant volume.

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Exercise Answer In Detail

1. Explain convection in daily life

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2. What are the changes of state in water? Explain.

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3. How can you experimentally prove that water is a bad conductor of heat? How is it

possible to heat water easily while cooking. Experiment to prove that water is a bad conductor of heat:

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Exercise Problems

1. What is the heat in joules required to raise the temperature of 25 grams of $0^{\circ}C$ to $100^{\circ}C$? What is the heat in Calories? (Specific heat of water $= 4.18 J/g^{\circ}C$)

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2. What could be the final temperature of a mixture of 100 g of water at $90^\circ C$ and 600 g of water at $20^\circ C$

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3. How much heat energy is required to change 2 kg of ice at 0° C into water at $20^\circ C$? (Specific latent heat of fusion of water =

3,34,000J/kg, Specific heat capacity of water = $4200 JKg^{-1}K^{-1}$)

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Exercise In Text Problems

1. Convert the following . (i)$25^{\circ}C$ to Kelvin (ii)200 K to .$^{\circ}$ C

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2. Convert the following . (i)35° C to Fahrenheit $(.^{\circ} F)$ (ii)$14^{\circ} F$ to $.^{\circ} C$

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3. Calculate the heat energy required to raise the temperature of 2 kg of water from $10^{\circ} C$ to $50^{\circ} C$. Specific heat capacity of water is $4200 JKg^{-1} K^{-1}$

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4. An iron ball requires 5000 J heat energy to raise its temperature by $20^{\circ}C$. Calculate the heat capacity of the iron ball.

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5. How much heat energy is required to melt 5 kg of ice? (Specific latent heat of ice = 336 Jg^{-1})

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6. How much boiling water at $100^{\circ}C$ Is needed to melt 2 kg of ice is that the mixture which is all water is at $0^{\circ}C$? [Specific heat capacity of water = $4.2JK^{-1}$ and specific latent heat of ice = 336 Jg^{-1}]

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Activity

1. Take a glass of water and put some ice cubes inte it. Observe it for some time. What

happens? The ice cubes melt and disappear. Why did it happen?

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2. Two objects of masses 100 g and 200 g are moving along the same line and direction with velocities of 2 m s-1 and m s-1 respectively. They collide and after the collision, the first object moves at a velocity of 1.67 ms-1. Determine the velocity of second object.

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3. A stone of 1 kg is thrown with a velocity of 20 m s-1 across the frozen surface of a lake and comes to rest after travelling a distance of 50 m. What is the force of friction between the stone and the ice?

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4. What is the momentum of an object of mass m, moving with a velocity v ?

A. (mv)2

B. 1/2(mv)2

C. mv

D. mv/4

Answer: c

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Additional Questions Short Answer

1. Write a note on radiation.

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2. What is heat ?

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3. What are the three scales of temperature ?

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4. Absolute zero is,

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5. What is the concept of temperature?

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6. Differentiate between the three temperature scales.

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Additional Questions Long Answer

1. Specific heat capacity

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2. Distinguish between conduction, convection, and rediation.

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3. What is meant by latent heat of vaporization

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4. Give reasons why- an igloo is built as a winter shelter

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