



# PHYSICS

## BOOKS - BAL BHARTI

### HEAT

#### Solved Examples

1. How much heat energy is necessary to raise the temperature of kg of water from  $20\text{ }^{\circ}\text{C}$  to  $100\text{ }^{\circ}\text{C}$ .



[Watch Video Solution](#)

2. A copper sphere of 100 g mass is heated to raise its temperature to  $100^{\circ}\text{C}$  and is released in water of mass 195 g and temperature  $20^{\circ}\text{C}$  in a copper calorimeter. If the mass of calorimeter is 50g, what will the maximum temperature of water?



[Watch Video Solution](#)

3. If 80 g steam of temperature  $97^{\circ}C$  is released on an ice slab of temperature  $0^{\circ}C$ , how much ice will melt? How much energy will be transferred to water? Given : specific heat capacity of water,  $c = 1 \text{ cal/g } ^{\circ}C$  Latent heat of melting of ice = 80 cal/g Latent heat of vaporization of water = 540 cal/g



[Watch Video Solution](#)

**Use Your Brain Power**

1. Is the concept latent heat applicable during transformation of gaseous phase to liquid phase and from liquid phase to solid phase?



[Watch Video Solution](#)

2. Answer in one sentence:

Where does the latent heat go during these transformation ?



[Watch Video Solution](#)

3. The wire does not break the ice slab while passing through it. Why?



[Watch Video Solution](#)

4. Is there any relationship of latent heat with the regelation?



[Watch Video Solution](#)

**5. Give scientific reasons:**

You know that as we go higher than the sea level, the boiling point of water decreases.

What would be effect on the melting point of solid?



**Watch Video Solution**

**6. Give scientiifc reasons:**

In regions with cold climate, the aquatic plants

and animals can survive even when the atmospheric temperature goes below  $0^{\circ}C$



[Watch Video Solution](#)

7. Give scientific reasons:

In cold regions in winter the Pipes for water supply break and even rocks crack.



[Watch Video Solution](#)

**Exercise**

1. Fill in the blanks and rewrite the sentences :

The amount of water vapour in air is determined in terms of its .....



[Watch Video Solution](#)

2. Fill in the blanks and rewrite the sentences :

If objects of equal masses are given equal heat, their final temperature will be different .

This is due to difference in their .....



[Watch Video Solution](#)



3. Fill in the blanks and rewrite the sentence.

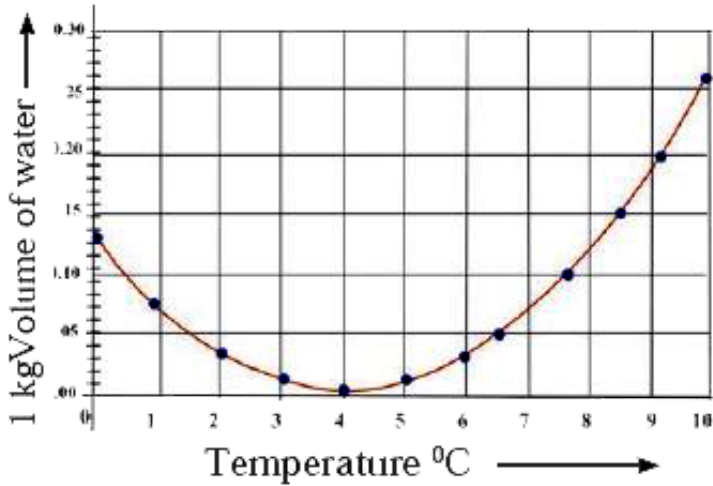
During transformation of liquid phase to solid phase, the latent heat is .....



[Watch Video Solution](#)

4. Observe the following graph. Considering the change in volume of water as its temperature is raised from  $0\text{ }^{\circ}\text{C}$ , discuss the difference in the behaviour of water and other substances. What is this behaviour of

water called?



[Watch Video Solution](#)

5. What is meant by specific heat capacity?

How will you prove experimentally that

different substances have different specific

heat capacities?



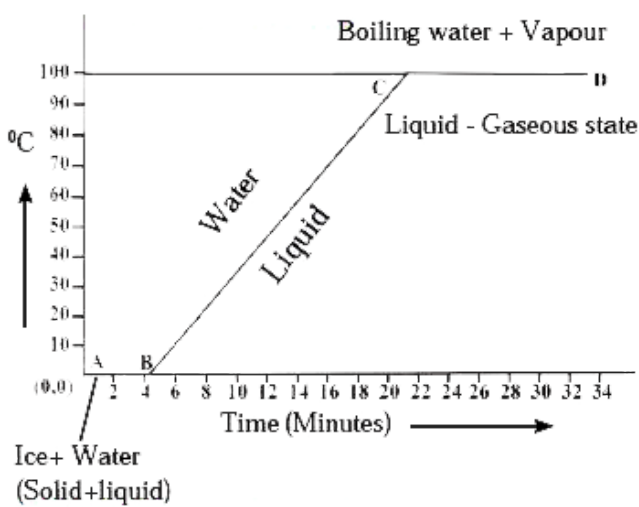
[Watch Video Solution](#)

6. While deciding the unit for heat, which temperature interval is chosen? why?



[Watch Video Solution](#)

7. Explain the following temperature versus time graph.



[Watch Video Solution](#)

**8. Answer the following questions :**

Explain the role of anomalous behaviour of water in preserving aquatic life in regions of cold climate.





[Watch Video Solution](#)

**9.** How can you relate the formation of water droplets on the outer surface of a bottle taken out of refrigerator with formation of dew



[Watch Video Solution](#)

**10.** Explain the following:

In cold regions in winter, the rocks crack due to anomalous expansion of water.



[Watch Video Solution](#)

**11.** Answer the following questions :

What is meant by latent heat ? How will the state of matter transform if latent heat is given off ?



**Watch Video Solution**

**12.** Which principle is used to measure the specific heat capacity of a substance?



**Watch Video Solution**

**13.** Explain the Role of Latent heat in the change of state of a substance



**Watch Video Solution**

**14.** On what basis and how will you determine whether air is saturated with vapour or not?



**Watch Video Solution**

**15.** Read the following paragraph and answer the questions:

If heat is exchanged between a hot and cold object, the temperature of the cold object goes on increasing due to gain of energy and the temperature of the hot object goes on decreasing due to loss of energy. The change in temperature continues till the temperatures of both the objects attain the same value. In this process, the cold object gains heat energy and the hot object loses heat energy. If the system of both the objects



is isolated from the environment by keeping it inside a heat resistance box (meaning that the energy exchange takes place between the two objects only ), then no energy can flow from inside the box or come into the box.

Heat transferred from where to where?



[Watch Video Solution](#)

**16.** Read the following paragraph and answer the questions:

If heat is exchanged between a hot and cold

object, the temperature of the cold object goes on increasing due to gain of energy and the temperature of the hot object goes on decreasing due to loss of energy. The change in temperature continues till the temperatures of both the objects attain the same value. In this process, the cold object gains heat energy and the hot object loses heat energy. If the system of both the objects is isolated from the environment by keeping it inside a heat resistance box (meaning that the energy exchange takes place between the two objects only), then no energy can flow from

inside the box or come into the box.

Which principle do we learn about from this process?



[Watch Video Solution](#)

**17.** Read the following paragraph and answer the questions:

If heat is exchanged between a hot and cold object, the temperature of the cold object goes on increasing due to gain of energy and the temperature of the hot object goes on

decreasing due to loss of energy. The change in temperature continues till the temperatures of both the objects attain the same value. In this process, the cold object gains heat energy and the hot object loses heat energy. If the system of both the objects is isolated from the environment by keeping it inside a heat resistance box (meaning that the energy exchange takes place between the two objects only), then no energy can flow from inside the box or come into the box.

How will you state the principle briefly?



**Watch Video Solution**

**18.** Read the following paragraph and answer the questions:

If heat is exchanged between a hot and cold object, the temperature of the cold object goes on increasing due to gain of energy and the temperature of the hot object goes on decreasing due to loss of energy. The change in temperature continues till the temperatures of both the objects attain the same value. In this process, the cold object gains heat energy and the hot object loses

heat energy. If the system of both the objects is isolated from the environment by keeping it inside a heat resistance box (meaning that the energy exchange takes place between the two objects only), then no energy can flow from inside the box or come into the box.

Which property of the substance is measured using this principle ?



**Watch Video Solution**

**19.** Equal heat is given to two objects A and B of mass 1 g. temperature of A increases by  $3^{\circ}C$  and B by  $5^{\circ}C$  which object has more specific heat ? And by what factor?



**Watch Video Solution**

**20.** Liquid ammonia is used in ice factory for making ice from water. If water at  $20^{\circ}C$  is to be converted into 2 kg ice at  $0^{\circ}C$  , how many grams of ammonia are to be evaporated?

(Given: The latent heat of vaporization of ammonia = 341 cal/g)



[Watch Video Solution](#)

**21.** A Thermally Insulated Pot Has 150 G Ice at Temperature  $0^{\circ}\text{C}$ . How Much Steam of  $100^{\circ}\text{C}$  Has to Be Mixed to It, So that Water of Temperature  $50^{\circ}\text{C}$  Will Be Obtained? Given :  
specific heat capacity of water,  $c = 1 \text{ cal/g } ^{\circ}\text{C}$   
Latent heat of vaporization of water = 540 cal/g  
Latent heat of melting of ice = 80 cal/g





[Watch Video Solution](#)

22. A calorimeter has mass 100 g and specific heat  $0.1 \text{ kcal}/\text{kg}^\circ\text{C}$ . It contains 250 gm of liquid at  $30^\circ\text{C}$  having specific heat of  $0.4 \text{ kcal}/\text{kg}^\circ\text{C}$ . If we drop a Piece of ice mass 10 g at  $0^\circ\text{C}$ , what will be the temperature of the mixture?



[Watch Video Solution](#)