

Board – ICSE

Class –10<sup>th</sup>

Topic – Calorimetry

1. Define the following terms –one calorie, heat capacity, specific heat capacity.
2. State of the ‘principle of calorimetry’
3. Define – Latent heat and Specific latent heat.
4. Why does the temperature of the surroundings start falling when the ice of a frozen lake starts melting?
5. i) In winter, the weather forecast for a certain day was ‘severe frost’. A wise farmer watered his fields the night before to prevent frost damage to his crops. Why did he water his fields?  
ii) 10125 J of heat energy is supplied to 4.5g of water at 100°C to convert it into steam. Find the specific latent heat of steam.
6. Which of the two, 1g of ice at 0°C or 1g of water at 0°C, contains more heat?
7. 1 calorie = \_\_\_\_?
8. Why does the temperature of the earth does not becomes very low at night?
9. State the assumption when --- Heat lost = Heat gained.
10. Water falls from a height of 50m. Calculate the rise in the temperature of water when it strikes the ground. ( $g = 10\text{m/s}^2$ ; Specific heat capacity of water = 4200 J/kg°C)
11. Explain :
  - (a) Name the SI unit of heat. How is this unit related to calorie?
  - (b) The heat capacity of a body of mass 0.05 kg is 62.5 J °C<sup>-1</sup>.
    - (i) How much heat energy is required to raise its temperature through 20°C?
    - (ii) What is its specific heat capacity in SI unit?
12. (a) What is a calorimeter? Why is it made of copper? Give two reasons.  
(b) An electric heater of power 1000 W raises the temperature of 5 kg of a liquid from 25°C to 31°C in 2 minutes. Calculate
  - (i) Heat capacity of liquid.
  - (ii) Specific heat capacity of liquid.
13. (a) Explain, why sandy soils get heated up quickly as compared to wet soils?  
(b) When 200 g of hot water at 80°C is added to 400 g of cold water, when the temperature of cold water rises by 18°C. Calculate the initial temp. of cold water.

14. (a) Specific heat capacity of a material is  $400 \text{ Jkg}^{-1}\text{K}^{-1}$ . What do you understand by the statement?
- (b) A copper calorimeter weighing 46.5 g contains 80 g of water at  $23^\circ\text{C}$ . 60.0 g of sand at  $90^\circ\text{C}$  is poured into the calorimeter and stirred gently. The final temperature recorded is  $30^\circ\text{C}$ . Calculate sp. heat capacity of sand.  
[sp. heat capacity of copper is  $0.4 \text{ Jg}^{-1} \text{ }^\circ\text{C}^{-1}$  and that of water is  $4.2 \text{ Jg}^{-1}\text{ }^\circ\text{C}^{-1}$ ]