WORKSHEET 2

CHAPTER 11 – CALORIMETRY AND LATENT HEAT

A. Tick (✓) the correct option.

1. The degree of hotness or coldness of a substance is called
   a. temperature. b. calorific value. c. latent heat. d. none of these.
2. An experimental technique for quantitative measurement of heat exchange is called
   a. spectrometry. b. latent heat. c. calorimetry. d. none of these.
3. The practical unit of heat energy is
   a. joule. b. calorie. c. watt. d. dioptre.
4. Which of the following elements has highest specific heat?
   a. Oxygen b. Chlorine c. Potassium d. Hydrogen
5. The SI unit of heat capacity is
   a. J $°C^{-1}$. b. J °C. c. J kg^{-1} $°C^{-1}$. d. none of these.

B. Fill in the blanks.

1. _____ of a body may be defined as its heat capacity per unit mass.
2. 1 calorie is equal to _____ joules.
3. The SI unit of specific heat is _____
4. The _____ and _____ breeze make the climate moderate in coastal regions.
5. _____ means heating the swollen parts of body at a moderate temperature.

C. State whether the following statements are true or false.

1. The calorimeter is covered with a lid to avoid loss of heat by connection.
2. The melting point increase when impurities are added to a substance.
3. All liquids expand on boiling.
4. The SI unit of latent heat of fusion is joule per kilogram (J/kg).
5. The boiling point of a liquid increase as external pressure decreases.

D. Match the following.

1. Steam to water	solidification
2. Water to ice	melting
3. Solid to gas	vaporisation
4. Ice to water	condensation
5. Water to steam	sublimation

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Class: X Date: .....

E. Answer the following questions.

Very short answer questions

1. Name two substances whose melting and freezing points differ widely.
2. Depending upon the nature of the process, what are the two kinds of latent heat?

Short answer questions

1. What is the effect of impurities on the boiling point?
2. What are the factors on which nature of heating curve depends upon?

Long answer questions

1. What are the natural consequences of latent heat of fusion of ice?
2. Calculate the mass of ice that can be melted by 26800 J of heat, the latent heat of fusion of ice is 3.35×10^5 J/kg.

ANSWERS

WORKSHEET 2

A. Tick (✓) the correct option.

1. a
2. c
3. b
4. d
5. a

B. Fill in the blanks.

1. Specific heat
2. 4.186
3. J kg^{-1} $°C^{-1}$
4. land, sea
5. Fomentation

C. State whether the following statements are true or false.

1. T
2. F
3. T
4. T
5. F

D. Match the following.

1. Steam to water	condensation
2. Water to ice	solidification
3. Solid to gas	sublimation
4. Ice to water	melting
5. Water to steam	vaporisation

E. Answer the following questions.

Very short answer questions

1. Wax and paraffin
2. The two kinds of latent heat are
   i. specific latent heart of fusion.
   ii. specific latent heat of vaporisation.

Short answer questions

1. The boiling point of a liquid is raised by adding impurities to it.
2. The nature of heating curve depends upon
   i. The range of temperature over which the substance is heated.
   ii. Any change of state which might occur during heating.

Long answer questions

1. One kilogram of ice on melting absorbs 336000 J of heat energy from the surrounding. The natural consequences of latent heat of fusion of ice are
   i. Snow on the mountains do not melt all at once.
   ii. It becomes bitterly cold as soon as the snow starts melting.
   iii. The weather becomes very cold after the hailstorm.
   iv. Icebergs are carried by ocean currents over very long distances.
2. Here,

$$Q = 26800 \text{ J}$$
$$\text{Latent heat of fusion of ice} = 3.35 \times 10^5 \text{ J/kg}$$
$$\text{Let the mass of ice} = m$$

We know,

$$
\begin{aligned}
Q &= m \times L_{\text{fusion}} \\
26800 &= m \times 3.35 \times 10^5 \\
m &= \frac{26800}{3.35 \times 10^5} \\
&= \frac{268}{3.35} \times 10^{-3}\ \text{kg} \\
&= 80 \times 10^{-3}\ \text{kg} \\
&= 80\ \text{g}
\end{aligned}
$$