WORKSHEET 1

CHAPTER 11 – CALORIMETRY AND LATENT HEAT

A. Tick (✓) the correct option.

1. The temperature of a body is the measure of its average
   a. potential energy. b. kinetic energy. c. chemical energy. d. none of these.
2. Heat is a form of energy called
   a. potential energy. b. kinetic energy. c. thermal energy. d. none of these.
3. The SI unit of all kinds of energy is
   a. dioptre. b. calorie. c. watt. d. joule.
4. The change from solid to liquid phase is called
   a. vaporisation. b. condensation. c. melting. d. none of these.
5. The change of state directly from solid to gaseous is called
   a. condensation. b. vaporisation. c. boiling. d. sublimation.

B. Fill in the blanks.

1. The melting point and freezing point of _____ differs widely.
2. A higher altitudes such as hill, the atmospheric pressure is _____
3. SI unit of latent heat of fusion is _____
4. One gram of ice on melting absorbs _____ of heat energy.
5. The _____ of a liquid increases on adding impurities.

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

1. Pure water crystallizes to ice at 0 °C and ice melts at 0 °C.
2. The process in which vapours, on cooling at a constant temperature, change to liquid is called condensation.
3. The change of state from liquid to gas is called sublimation.
4. The boiling point of pure water is 0 °C.
5. The amount of heat required to change the state of a given substance without any change in the temperature is called latent heat.

D. Match the following.

1. One calorie of heat	0 °C
2. Freezing point of pure water	2268 kJ/kg
3. SI unit of specific heat	335 kJ/kg
4. Specific latent heat of fusion of ice	4.186 J
5. Specific latent heat of vaporisation of water	J/kg °C

Name: ..... Teacher's signature: .....

Class: ..... X ..... Date: .....

E. Answer the following questions.

Very short answer questions

1. What is the practical unit of heat energy?
2. Define one calorie.

Short answer questions

1. Define temperature in terms of kinetic energy.
2. What is the relation between heat capacity and specific heat?

Long answer questions

1. Differentiate between heat capacity and specific heat.
2. An electric immersion heater of power 2000 W is switched for 16 minutes. The heat supplied by it raises the temperature of 4 kg of liquid from 10 °C to 50 °C. Calculate heat capacity of liquid and its specific heat capacity.

ANSWERS

WORKSHEET 1

A. Tick (✓) the correct option.

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

B. Fill in the blanks.

1. wax 2. low 3. Joule/kilogram 4. 336 J 5. boiling point

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

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

D. Match the following.

1.	One calorie of heat	4.186 joule
2.	Freezing point of pure water	0 °C
3.	SI unit of specific heat	J/kg °C
4.	Specific latent heat of fusion of ice	335 kJ/kg
5.	Specific latent heat of vapourization of water	2268 kJ/kg

E. Answer the following questions.

Very short answer questions

1. Calorie (cal)
2. One calorie of heat is the quantity of heat energy required to raise the temperature of one gram of pure water from 14.5 °C to 15.5 °C.

Short answer questions

1. The temperature of a body is a measure of average kinetic energy of a body.
2. Heat capacity = Mass × Specific heat

Long answer questions

1. Refer Table 11.3, Page 227 of the textbook.
2. Power = 2000 W = 2000 J/s
   Time = 16 min = 16 × 60 s
   Mass of liquid = 4 kg
   Initial temperature = 10 °C
   Final temperature = 50 °C
   Heat lost = Heat gained
   $2000 \times 16 \times 60$ = Heat capacity × 40

$$\text{Heat capacity} = \frac{2000 \times 60 \times 16}{40} = 48000 \text{ J/°C}$$

$$\text{Specific heat capacity} = \frac{\text{Heat capacity}}{\text{Mass}} = \frac{48000}{4} = 12000 \text{ J/kg°C}$$