

Unit 8: Thermal Properties of Matter

Textbook Exercise Questions

8.1 Encircle the correct answer from the given choices.

- i. Water freezes at: (LHR 2013, 2016)
(a) 0 °F (b) 32 °F ✓
(c) -273 K (d) 0 K
- ii. Normal human body temperature is: (LHR 2016)
(a) 15 °C (b) 37 °C ✓
(c) 37 °F (d) 98.6 °F
- iii. Mercury is used as thermometric material because it has:
(a) Uniform thermal expansion (b) low freezing point
(c) small heat capacity (d) all of the above properties ✓
- iv. Which of the following material has large specific heat? (GRW 2013)
(a) Copper (b) ice
(c) water ✓ (d) mercury
- v. Which of the following material has large value of temperature coefficient of linear expansion?
(a) Aluminum ✓ (b) gold
(c) brass (d) steel
- vi. What will be the value of β for a solid for which α has value of $2 \times 10^{-5} \text{ K}^{-1}$?
(a) $2 \times 10^{-5} \text{ K}^{-1}$ (b) $6 \times 10^{-5} \text{ K}^{-1}$ ✓
(c) $8 \times 10^{-15} \text{ K}^{-1}$ (d) $8 \times 10^{-5} \text{ K}^{-1}$
- vii. A large water reservoir keeps temperature of nearby land moderate due to:
(a) Low temperature of water (b) low specific heat of water
(c) less absorption of heat (d) large specific heat of water ✓
- viii. Which of the following affects evaporation?
(a) Temperature (b) Surface area of the liquid
(c) wind (d) all of the above ✓

8.2 Why does heat flow from hot body to cold body?

Ans: Molecules of hot body have greater kinetic energy than the molecules of cold body. Therefore, fast moving molecules give their energy to cold body. So we can say that heat flows from hot body to the cold body.

8.3 Define the term heat and temperature.

(LHR 2013)

Ans: Heat

Heat is the energy that is transferred from one body to the other in thermal contact with each other as a result of the difference of temperature.

Temperature

Degree of coldness or hotness of the body is a measure of its temperature

8.4 What is meant by internal energy of a body?

Ans: The sum of kinetic energy and potential energy associated with the atoms, molecules and particles of a body is called the internal energy.

8.5 How does heating affect the motion of molecules of a gas?

Ans: On heating the gas, the motion of the molecules becomes faster. As a result average K.E and temperature of gas increases.

8.6 What is thermometer? Why mercury is preferred as thermometric substance?

Ans: The instrument which is used to measure the temperature is called a thermometer. Mercury is preferred as thermometric substance because

- It has high boiling point
- It has low melting point
- It does not wet glass
- Good conductor
- Opaque
- Has low heat capacity

8.7 Explain the volumetric thermal expansion.

Ans: See Q. 11 Long Question

8.8 Define specific heat. How would you find the specific heat of a solid?

Ans: See Q. 2 'the method of mixture is used to find the specific heat of any solid'.

8.9 Define and explain latent heat of fusion.

Ans: See Q. 6 Long Question

8.10 Define latent heat of vaporization.

Ans: See Q. 7 Long Question

8.11 What is meant by evaporation? On what factors the evaporation of a liquid depends? Explain how cooling is produced by evaporation?

Ans: See Q. 8 Long Question

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