



MODERN SCIENCE ACADEMY

CHATHA BAKHTAWAR, ISLAMABAD

8. "Thermal Properties of Matter"

Sr.	Statements	A	B	C	D
1	Water freezes at:	0 °F	32 °F	-273 K	0 K
2	Normal human body temperature is:	15 °C	37 °C	37 °F	98.6 °C
3	Mercury is used as thermometric material because it has:	uniform thermal expansion	low freezing point	small heat capacity	all the above properties
4	Which of the following material has large specific heat?	copper	ice	water	mercury
5	Which of the following material has large value of temperature coefficient of linear expansion?	aluminum	gold	brass	steel
6	What will be the value of β for a solid for which α has a value of $2 \times 10^{-5} \text{ K}^{-1}$?	$2 \times 10^{-5} \text{ K}^{-1}$	$4 \times 10^{-5} \text{ K}^{-1}$	$6 \times 10^{-5} \text{ K}^{-1}$	$8 \times 10^{-5} \text{ K}^{-1}$
7	A large water reservoir keeps the temperature of nearby land moderate due to:	low temperature of water	low specific heat of water	less absorption of heat	large specific heat of water
8	Which of the following affects evaporation?	temperature	surface area of the liquid	wind	all of these
9	Temperature is equal to _____ of substance.	average K.E. of molecules	individual K.E. of each molecule	average P.E. of molecules	individual P.E. of each molecule
10	Boiling point of water is _____.	212 °C	212 °F	100 K	373 °C
11	J/kg K is the unit of:	specific heat capacity	heat capacity	latent heat of fusion	heat energy
12	At which temperature, water has maximum density:	0 °C	-4 °C	-273 K	4 °C
13	Evaporation takes place from _____ of liquid.	surface	bottom	center	any location
14	Number of divisions on Fahrenheit scale between its reference points are:	100	273	212	180
15	By adding heat at melting point, the temperature of substance does not change. Heat added to substance is used to _____ of substance.	increase K.E. of particles	decrease K.E. of particles	increase attraction b/w particles	decrease attraction b/w particles
16	336 J/g is latent heat of fusion of a material. How much heat is required to melt 10 g of material at its melting point?	336 J	3360 J	33600 J	$3.36 \times 10^5 \text{ J}$
17	Substance with their specific heats are given below. Which of the following substances will cool down quickly if heated for same temperature?	Water ($4200 \text{ J kg}^{-1} \text{ K}^{-1}$)	Wood ($1700 \text{ J kg}^{-1} \text{ K}^{-1}$)	Copper ($400 \text{ J kg}^{-1} \text{ K}^{-1}$)	Silver ($250 \text{ J kg}^{-1} \text{ K}^{-1}$)
18	On which of the following physical quantities, specific heat capacity of a substance depends:	mass	temperature	nature	mass and temperature
19	Water is used in radiators of automobile as a coolant. Why?	it is easily available	it is low cost or free	it has large specific heat	all of these
20	At which value, temperature on Fahrenheit and Celsius scale have same readings?	0°	-40°	153°	-32°
21	10 °C = _____ K.	-263	273	-283	283
22	The S.I. unit of heat is:	J	kg	K^{-1}	K
23	The S.I. unit of temperature is:	°C	°F	J	K
24	310 K in centigrade scale is:	37 °C	310 °C	63 °C	273 °C
25	When water at 0 °C is heated, it contracts till the temperature reaches:	1 °C	4 °C	100 °C	100 K

26	Value of absolute zero on Celsius scale is:	100	0	-273	273
27	The relation between coefficient of linear expansion (α) and coefficient of volume expansion (β) is:	$\alpha=3\beta$	$\beta=\alpha/3$	$\beta=3\alpha$	$\alpha=\beta/2$
28	The S.I. unit of latent heat is:	JK^{-1}	Jkg^{-1}	JK kg^{-1}	JK kg
29	How much heat is required to melt 1 kg of Zinc at its boiling temperature 240°C with latent heat of $113 \times 10^3 \text{ Jkg}^{-1}$.	$113 \times 10^3 \text{ J}$	$1.13 \times 10^3 \text{ J}$	$2.4 \times 10^5 \text{ J}$	$2.71 \times 10^7 \text{ J}$
30	Heat is the form of:	pressure	weight	energy	all
31	Heat capacity is the product of mass and _____.	boiling point	freezing point	specific heat	energy
32	Thermal energy transfer required to change a solid into liquid without changing its temperature is called _____.	latent heat of fusion	latent heat of vaporization	latent heat of boiling	latent heat of melting
33	Thermal energy transfer required to change a liquid into gas without changing its temperature is called:	latent heat of fusion	latent heat of vaporization	latent heat of boiling	latent heat of melting
34	Evaporation can occur at:	freezing point	boiling point	melting point	all temperatures
35	Rate of evaporation of liquid can be increased by:	increasing humidity	decreasing temperature	increasing its boiling point	decreasing atmospheric pressure
36	Linear thermal expansion of a solid depends upon:	increase in temperature	original length	nature of material	all of these
37	Coefficient of linear thermal expansion of a solid depends upon:	increase in temperature	original length	nature of material	all of these
38	The formula for specific heat is:	$c = \frac{\Delta Q}{m\Delta t}$	$c = \frac{m\Delta t}{\Delta Q}$	$c = \frac{m\Delta Q}{\Delta t}$	$c = mQ\Delta t$
39	The formula for latent heat of fusion is:	$L_f = m\Delta Q$	$L_f = mc$	$L_f = \frac{m}{\Delta Q}$	$L_f = \frac{\Delta Q}{m}$
40	Sum of kinetic and potential energies associated with all particles of an object is called:	heat energy	temperature	internal energy	mechanical energy

“Important Short Questions”

- 1) Why does heat flow from hot body to cold body?
- 2) Define the terms heat and temperature.
- 3) Convert 30°C into Kelvin and Fahrenheit Scale.
- 4) What is meant by internal energy of a body?
- 5) What is freezing point and melting point? Are they always same or can be different?
- 6) How does heating affect the motion of molecules of a gas?
- 7) What is a thermometer? Why mercury is preferred as a thermometric substance?
- 8) Define specific heat. How would you find the specific heat of a solid?
- 9) Define and explain latent heat of fusion.
- 10) Define latent heat of vaporization.
- 11) Differentiate evaporation and vaporization (at least five).
- 12) How cooling is produced by evaporation?
- 13) Water has a large specific heat. Give its practical application that uses this property.
- 14) Explain why it is advisable to add water to an overheated automobile engine only slowly, and only with the engine running.
- 15) Why does temperature of liquids not change when heated at their boiling point?
- 16) Why burns caused by steam at 100°C on the skin are more often severe than burns caused by water at 100°C ?
- 17) Why metallic handle of a door is colder than the wood of the same door when touched?
- 18) Which type of clothes do the people of desert wear and why?
- 19) Why does the temperature of sea shore cities remain moderate during the most of the year? Why does temperature of land areas vary more during winters and summers?
- 20) During the process of sweating (perspiration), we feel cooling during a hot day. Why?

- 21) How evaporation phenomenon is utilized in refrigeration cooling? Explain in detail.
- 22) What is bimetallic strip? Write its uses.
- 23) How a bimetallic strip, made up of copper and iron is used as automatic switch in different devices? Give an example.
- 24) What is anomalous expansion of water?
- 25) How is anomaly in the expansion of water help marine life to survive in extremely cold areas?
- 26) Why rollers are used at the end of steel bridges?
- 27) Why are small gaps left behind the girders mounted in walls?
- 28) An iron rim which is fixed around a wooden wheel is heated before its fixture. Why?
- 29) Why is ice at 0°C a better coolant of soft drinks than water at 0°C ?
- 30) Why small gaps are left at the joints of sections of railway tracks?

“Important Long Questions”

- A. What are different scales of temperature? Compare them. Write their conversion formulae.
- B. What is evaporation? On what factors evaporation depends? Why evaporation cause cooling?
- C. Define latent heats of fusion and vaporization. With the help of graph, how will you calculate the latent heat of fusion of ice and latent heat of vaporization of water?
- D. What is thermal expansion of solids? Explain linear thermal expansions of solids in detail.
- E. What is thermal expansion of solids? Explain volumetric thermal expansions of solids in detail.
- F. Explain thermal expansion of liquids in detail.