

# 10<sup>th</sup> CLASS-PHYSICAL SCIENCE

## HEAT

### ½ Mark Questions

1. Write the value of absolute zero temperature?
2. Find the value of x, if  $30^{\circ}\text{C} + 300\text{K} + 10\text{K} + x\text{K} = 400^{\circ}\text{C}$
3. Name the physical quantity which is a measure of thermal equilibrium
4. The difference in temperature of a body measured as  $27^{\circ}\text{C}$ . Find the value of its corresponding difference in Kelvin scale?
5. Write the relation between K.E and T if K.E is the average kinetic energy of the molecules and T is Absolute Temperature of the body.
6. What happens to Absolute temperature of a body, when the average kinetic energy of the molecule of the body is halved.
7. The temperature of a substance is  $27^{\circ}\text{C}$ , when its kinetic energy is Y. Find the temperature of a substance, if we tripled the average kinetic energy.
8. **Statement X:** Transfer of heat energy takes place from one body to another when they are in thermal contact and at different temperatures  
**Statement Y:** Transfer of heat energy takes place from one body to another when they are in thermal contact and having different amounts of heat energy only

Which of the above statement is correct ?

9. **A:** Heat flows from A to B when an object A at  $10^{\circ}\text{C}$  and another object B at  $10\text{K}$  are kept in contact

**R:** Temperature determines the direction of heat flows

Which of the following statement is correct?

A) A and R both are correct and R is not correct expression of A

B) A and R both are correct and R is correct expression of A

C) A is correct, R is incorrect

D) A is incorrect, R is correct

10. Choose the suitable answers of section B with section A

#### Section A

1) 1 K.cal

2) Flow of heat energy requires

#### Section B

P) 4.186J

Q) 4186J

R) Temperature difference

S) Heat energy difference

11. Name the substance which has highest specific heat?
12. Same amount of heat is supplied to two liquids A and B. The liquid B shows greater rise in temperature. What can you say about the specific heat of liquid B when compared to liquid A.
13. X: The amount of heat required to raise the temperature of unit mass of substance through  $1^{\circ}\text{C}$  is known as specific heat.  
Y: The amount of heat required to raise the temperature of 1gm of water through  $1^{\circ}\text{C}$  is calorie.  
Which of the above statement is correct?
14. Find the temperature of mixture of equal quantities of water at  $90^{\circ}\text{C}$  and water at  $60^{\circ}\text{C}$  when added together?
15. Specific heat of Copper, Iron, Brass and water are 0.095, 0.115, 0.092 and 1 respectively. Which of the above material can be heated quickly when they are kept in sun light with same masses?
16. Choose the suitable answers of Section B with Section A

#### Section A

1) Heat ( )

2) Specific heat ( )

3) 1 Cal/g- $^{\circ}\text{C}$  ( )

#### Section B

P) Cal/kg-K

Q) J/kg-K

R) joule

S)  $4.2 \times 10^3$  J/kg-K

T)  $4.2 \times 10^{-3}$  J/kg-K

17. Choose the suitable answers of Section B with the Section A

**Section A**

- 1) Kerosene ( )
- 2) Ice ( )
- 3) Lead ( )

**Section B**

- P) 0.031 Cal/g-<sup>0</sup>C
- Q) 0.033 Cal/g-<sup>0</sup>C
- R) 0.5 Cal/g-<sup>0</sup>C
- S) 1 Cal/g-<sup>0</sup>C

- 18. What happens to the temperature of a liquid substance during evaporation
- 19. What happens to the temperature of a substance during phase change takes place
- 20. What happens if heat is supplied to water continuously?
- 21. Write the value of boiling point of water and latent heat of vaporization of water at 1 atmospheric pressure
- 22. Write the value of melting point of ice and latent heat of fusion of ice at 1 atmospheric pressure
- 23. How much heat energy is required to convert 1 gram of ice to liquid at a normal atmospheric pressure
- 24. How much heat energy is required to convert 1 gram of water to water vapour at normal atmospheric pressure
- 25. What amount of ice can be melted by 4000 calorie of heat?
- 26. Why does ice floats on water?
- 27. Choose the suitable answers of Section B with Section A

**Section A**

- 1) Heat ( )
- 2) Specific heat ( )
- 3) Latent heat ( )

**Section B**

- P) Cal/g
- Q) Cal/g-<sup>0</sup>C
- R) Cal

28. The melting and boiling point of three substance are shown below

<u>Substance</u>	<u>BP</u>	<u>MP</u>
A	105 <sup>0</sup> C	100 <sup>0</sup> C
B	89 <sup>0</sup> C	72 <sup>0</sup> C
C	100 <sup>0</sup> C	97 <sup>0</sup> C

What will be the state of substances at 98<sup>0</sup> C?

- 29. Name the phenomena involved in the formation of Dew and fog?
- 30. Find the resultant temperature when 1 g. of water at 80<sup>0</sup> C is mixed with 1 gram of ice at 0<sup>0</sup>C?
- 31. What is a cooling phenomenon?
- 32. Write the relation between CGS unit of heat and SI unit of heat.
- 33. If initial temperature of the two samples of masses  $m_1$  and  $m_2$  be  $T_1$  and  $T_2$ , then what is the final temperature of the mixture (T) ?
- 34. What physical quantity is increased, when water changes into ice?
- 35. Find the specific heat of a substance, when it's mass is m and the required heat is Q to raise 1 degree Celsius
- 36. Whether ice melts below 0<sup>0</sup>C?
- 37. Why lead is used in soldering?
- 38. Which of the following process doesn't have gas phase?  
Evaporation, Boiling, Condensation, Melting
- 39. Write the principle of method of mixtures?
- 40. Choose the incorrect statement
  - a) Temperature is the degree of hotness or coldness
  - b) At thermal equilibrium, a body neither receives nor gives out heat energy
  - c) The average K.E of the molecules is directly proportional to the absolute temperature
  - d) The rate of raise in temperature independent on the nature of the substance

## KEY

1.  $0\text{K} = -273^{\circ}\text{C}$
2.  $60\text{K}$  (or)  $-213^{\circ}\text{C}$
3. Temperature
4.  $27\text{K}$
5.  $\text{K.E} \propto T$
6. It becomes halved
7.  $900\text{K}$
8. X
9. B
10. 1-Q, 2-R
11. Water
12. Specific heat of liquid B is less than the specific heat of A
13. X and Y
14.  $75^{\circ}\text{C}$
15. Brass
16. 1-R, 2-Q, 3-S
17. 1-Q, 2-R, 3-P
18. Decrease
19. Remains constant
20. The temperature of water raises continuously till it reaches  $100^{\circ}\text{C}$  and then it boiling
21.  $100^{\circ}\text{C}$  (or)  $373\text{K}$ ,  $540\text{ Cal/g}$
22.  $0^{\circ}\text{C}$  (or)  $273\text{K}$ ,  $80\text{ Cal/g}$
23.  $80\text{ Cal}$
24.  $540\text{ Cal}$
25.  $50\text{g}$
26. The density of an ice is less than the density of water
27. 1-R, 2-Q, 3-P
28. A  $\rightarrow$  Solid, B  $\rightarrow$  Gaseous, C  $\rightarrow$  Liquid
29. Condensation
30.  $0^{\circ}\text{C}$
31. Evaporation
32.  $1\text{Cal} = 4.186\text{J}$
33.  $T = \frac{m_1 T_1 + m_2 T_2}{m_1 + m_2}$
34. Volume
35.  $s = Q/m$
36. Yes
37. Lead has low specific heat
38. Melting
39. Net heat lost = Net heat gain
40. d