WBBSE
MADHYAMIK

CHAPTER 4
THERMAL EXPANSION

STUDY MATERIAL

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MCQ

1. Which of the following is correct in the increasing order of thermal conductivity?

(a) Ag, Cu, Al

(b) Al, Ag, Cu

(c) Cu, Ag, Al

(d) Al, Cu, Ag

Ans. (d) Al, Cu, Ag

2. The linear expansion coefficient of iron is 1.2 x 10^{-5} per °C, then the volumetric expansion coefficient of iron will be

(a) 4.8 x 10^{-5} per °C

(b) 6.3 x 10^{-5} per °C

(c) 3.6 x 10^{-5} per °C

(d) 2.4 x 10^{-5} per "C

Ans. (c) 3.6 x 10^{-5} per °C

3. A round hole is drilled in a rectangular copper plate. Pore size on a heating plate:

(a) will increase

(b) will decrease

(c) will remain the same

(d) none of these

Ans. (a) will increase.

4. C.G.S. The unit of linear expansion coefficient in the method is:

(a) per A

(b) per K

(c) Per F

(d) per °C

Ans. (d) per °C

5. The linear expansion of a metallic rod is proportional to

(a) of initial length

(b) rise in temperature

(c) both a and b

(d) none of these

Ans. (c) both a and b.

6. A solid and a hollow iron sphere are heated at the same temperature, then the expansion :

(a) more in a hollow sphere

(b) more in a solid sphere

(c) will be equal in both the spheres

(d) none of these

Ans. (c) will be the same in both spheres.

7. On what does the magnitude of heat passing through a wall not depend?

(a) thickness

(b) area

(c) nature of matter

(d) average temperature

Ans. (d) Average temperature.

8. The coefficient of thermal conductivity of a metallic rod depends on.

(a) on the length of the rod

(b) the difference in temperature of both the ends

(c) on the nature of matter

(d) all of these

Ans. (c) on the nature of matter.

9. Increasing the temperature of solids increases their density:

(a) increases

(b) decreases

(c) remains the same

(d) none of these

Ans. (b) decreases.

10. S.I. unit of thermal conductivity is -

(a) K Cal $m^{-1}K^{-1}S^{-1}$

(b) Cal $m^{-1}K^{-1}S^{-1}$

(c) J m^{-1} K^{-1} S^{-1}

(d) None of these.

Ans. (c) J m^{-1} $K^{-1}S^{-1}$

11. Which one shows exceptional type expansion against heat?

(a) Mercury

(b) Copper

(c) Water

(d) Milk

Ans.(c) Water

12. The relationship between the coefficients of linear expansion (a) superficial expansion (B) & cubical expansion (y) of a solid is

(a) a/3=B/2-y

(b) a=B/2=y/3

(c) a=2B=3y

(d) a=B/3=y/2

Ans. (b) a=B/2=Y/3

13. If the linear expansion coefficient of a metal is a, then the volumetric expansion coefficient will be.

(a) 2/a

(b) 3/a

(c) a/3

(d) a/2

Ans.(b) 3

14. If the linear expansion coefficient of a metal is a, then the areal expansion coefficient will be.

(a)2/a

(b)3a

(c) a/3

(d) c/2

Ans.(a) 2 a

1 Marks

1. Whose value is more in the virtual and real expansion of a liquid?

Answer: The value of the actual spread is more.

2. What is the expansion of a substance when it is heated called?

Answer: thermal expansion

3. Which expansion will be the maximum in a rod?

Answer: Volume expansion.

4. What is the relation between linear diffusion coefficient and regional diffusion coefficient?

Answer: The areal expansion coefficient is twice the linear expansion coefficient.

5. Name a device that automatically controls the temperature.

Answer: Thermostat.

6. What is the name of the coefficient of expansion of gases at constant volume?

Answer: pressure expansion coefficient

7. What is the relation between the real and apparent expansion of a liquid?

Ans. The real expansion of fluid = Apparent expansion of fluid + Expansion of behavior

8. What is the relation between /, and / with the absolute temperature for an ideal gas?

Ans. 7, And both are inversely proportional to the absolute temperature of the gas.

9. Among metals and non-metals which has the highest thermal conductivity?

Ans. of metals.

10. Name a good conductor non-metal

Ans. graphite.

11. What is the unit of coefficient of thermal conductivity?

Ans. $Jm^{-1} C^{-1}S^{-1}$ or $Wm^{-1}K^{-1}$

12. What is the relation between the flow of heat and the area of a cross-section of a metallic rod?

Ans. A magnitude of heat

A cross-sectional area

13. What is the S.I. unit of thermal resistance?

Ans. $W^{-1}K$ or $J^{-1}S$ °C

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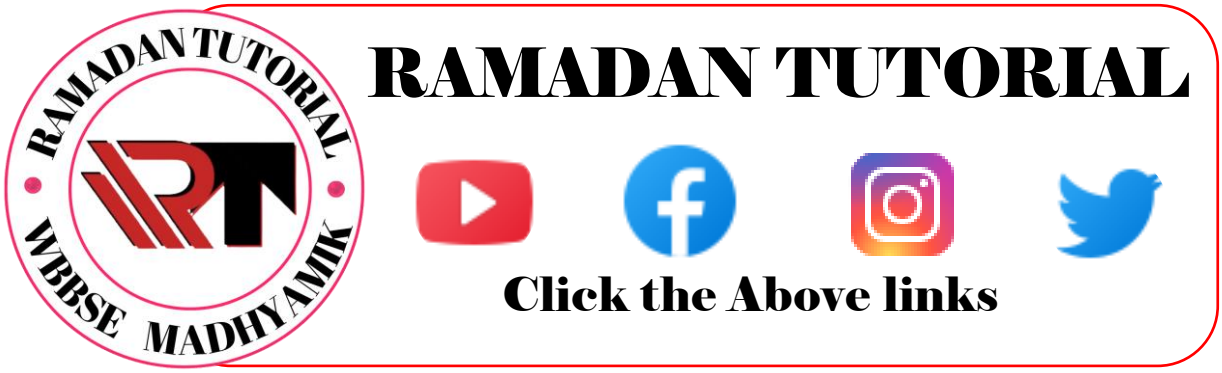
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