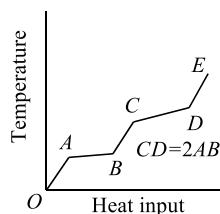


CLASS : XITH
DATE :

SUBJECT : PHYSICS
DPP NO. :7

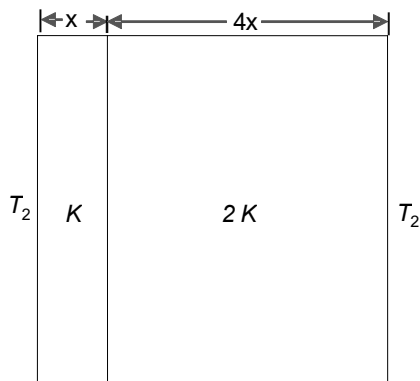
Topic :- THERMAL PROPERTIES OF MATTER

- Work done in converting one gram of ice at -10°C into steam at 100°C is
a) 3045 J b) 6056 J c) 721 J d) 616 J
- There is some change in length when a 33000 N tensile force is applied on a steel rod of area of cross-section 10^{-3} m^2 . The change of temperature required to produce the same elongation, if the steel rod is heated, is (The modulus of elasticity is $3 \times 10^{11}\text{ Nm}^{-2}$ and the coefficient of linear expansion of steel is $1.1 \times 10^{-5}\text{ }^{\circ}\text{C}^{-1}$).
a) 20°C b) 15°C c) 10°C d) 0°C
- If a graph is plotted taking the temperature in Fahrenheit along Y-axis and the corresponding temperature in Celsius along the X-axis, it will be a straight line
a) Having a +ve intercept on Y-axis b) Having a +ve intercept on X-axis
c) Passing through the origin d) Having a -ve intercepts on both the axis
- A solid material is supplied with heat at constant rate and the temperature of the material changes as shown. From the graph, the false conclusion drawn is



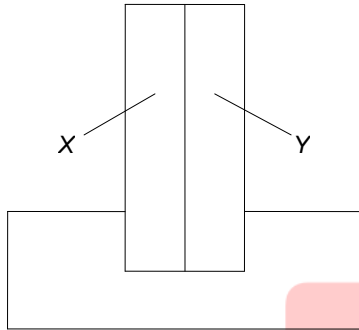
- AB and CD of the graph represent phase changes
 - AB represents the change of state from solid to liquid
 - Latent heat of fusion is twice the latent heat of vaporization
 - CD represents change of state from liquid to vapour
- A lead bullet strikes a target with a velocity of 480 ms^{-1} . If the bullet falls dead, the rise in temperature of the bullet ($c = 0.03$), assuming that heat produced is equally shared between the bullet and target is
a) 557°C b) 457°C c) 857°C d) 754°C

6. The absolute zero is the temperature at which
 a) Water freezes
 b) All substances exist in solid state
 c) Molecular motion ceases
 d) None of the above
7. In a water-fall the water falls from a height of $100m$. If the entire K. E. of water is converted into heat, the rise in temperature of water will be
 a) $0.23^{\circ}C$
 b) $0.46^{\circ}C$
 c) $2.3^{\circ}C$
 d) $0.023^{\circ}C$
8. The thermal radiation from a hot body travels with a velocity of
 a) $330\ ms^{-1}$
 b) $2 \times 10^8\ ms^{-1}$
 c) $1200\ ms^{-1}$
 d) $3 \times 10^8\ ms^{-1}$
9. One end of a copper rod of length $1.0\ m$ and area of cross-section $10^{-3}\ m^2$ is immersed in boiling water and the other end in ice. If the coefficient of thermal conductivity of copper is $92\ cal/m\cdot s\cdot^{\circ}C$ and the latent heat of ice is $8 \times 10^4\ cal/kg$, then the amount of ice which will melt in one minute is
 a) $9.2 \times 10^{-3}\ kg$
 b) $8 \times 10^{-3}\ kg$
 c) $6.9 \times 10^{-3}\ kg$
 d) $5.4 \times 10^{-3}\ kg$
10. Triple point of water is
 a) $273.16^{\circ}F$
 b) $273.16\ K$
 c) $273.16^{\circ}C$
 d) $273.16R$
11. Let there be four articles having colours blue, red, black and white. When they are heated together and allowed to cool, which article cool at the earliest
 a) Blue
 b) Red
 c) Black
 d) White
12. The temperature of the two outer surfaces of a composite slab, consisting of two materials having coefficients of thermal conductivity K and $2K$ and thickness x and $4x$, respectively are T_2 and T_1 ($T_2 > T_1$). The rate of heat transfer through the slab, in a steady state is $\left(\frac{A(T_2-T_1)K}{x}\right) f$, with f equals to



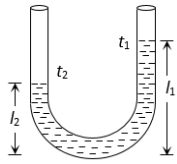
- a) 1
 b) $1/3$
 c) $2/3$
 d) $1/3$

13. Temperatures of two stars are in ratio 3:2. If wavelength of maximum intensity of first body is 4000\AA , what is corresponding wavelength second body?
 a) 9000\AA b) 6000\AA c) 2000\AA d) 8000\AA
14. During constant temperature, we feel colder on a day when the relative humidity will be
 a) 25% b) 12.5% c) 50% d) 75%
15. A bimetallic strip consists of metals X and Y . It is mounted rigidly at the base as shown. The metal X has a higher coefficient of expansion compared to that for metal Y . when bimetallic strip is placed in a cold bath



- a) It will bend towards the right b) It will bend towards the left
 c) It will not bend but shrink d) It will neither bend nor shrink
16. A faulty thermometer has its lower fixed point marked as -10°C and upper fixed point marked as 110° . If the temperature of the body shown in this scale is 62° , the temperature shown on the Celsius scale is
 a) 72°C b) 82°C c) 60°C d) 42°C
17. Which of the prism is used to see infra-red spectrum of light
 a) Rock-salt b) Nicol c) Flint d) Crown
18. The two ends of a rod of length L and a uniform cross-sectional area A are kept at two temperature T_1 and T_2 ($T_1 > T_2$). The rate of heat transfer, $\frac{dQ}{dt}$, through the rod in a steady state is given by
 a) $\frac{dQ}{dt} = \frac{kL(T_1 - T_2)}{A}$ b) $\frac{dQ}{dt} = \frac{k(T_1 - T_2)}{LA}$ c) $\frac{dQ}{dt} = kLA(T_1 - T_2)$ d) $\frac{dQ}{dt} = \frac{kA(T_1 - T_2)}{L}$
19. The temperatures of two bodies A and B are respectively 727°C and 327°C . The ratio $H_A : H_B$ of the rates of heat radiated by them is
 a) $727 : 327$ b) $5 : 3$ c) $25 : 9$ d) $625 : 81$

20. In a vertical U-tube containing a liquid, the two arms are maintained at different temperatures t_1 and t_2 . The liquid columns in the two arms have heights l_1 and l_2 respectively. The coefficient of volume expansion of the liquid is equal to



a) $\frac{l_1 - l_2}{l_2 t_1 - l_1 t_2}$

b) $\frac{l_1 - l_2}{l_1 t_1 - l_2 t_2}$

c) $\frac{l_1 + l_2}{l_2 t_1 + l_1 t_2}$

d) $\frac{l_1 + l_2}{l_1 t_1 + l_2 t_2}$

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