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TARGET : NEET (UG) 2024

Course : SARANSH (Youtube Live CRASH COURSE)

PHYSICS

DPP

DAILY PRACTICE PROBLEMS

DPP NO. 2

PHYSICS: Calorimetry & Thermal Expansion

DPP No. :2

1. Maximum density of H_2O is at the temperature

(1) 32°F (2) 39.2°F (3) 42°F (4) 4°F

2. A uniform metal rod is used as a bar pendulum. If the room temperature rises by 10°C, and the coefficient of linear expansion of the metal of the rod is 2×10^{-6} per °C, the period of the pendulum will have percentage increase of

(1) $- 2 \times 10^{-3}$ (2) $- 1 \times 10^{-3}$ (3) 2×10^{-3} (4) 1×10^{-3}

3. On heating a liquid of coefficient of cubical expansion γ in a container having coefficient of linear expansion $\gamma / 3$, the level of liquid in the container will

(1) Rise

(2) Fall

(3) Will remain almost stationary

(4) It is difficult to say

4. When a bimetallic strip is heated, it

(1) Does not bend at all

(2) Gets twisted in the form of an helix

(3) Bend in the form of an arc with the more expandable metal outside

(4) Bends in the form of an arc with the more expandable metal inside

5. If the length of a cylinder on heating increases by 2%, the area of its base will increase by

(1) 0.5% (2) 2% (3) 1% (4) 4%

6. The volume of a gas at 20°C is 100 cm³ at normal pressure. If it is heated to 100°C, its volume becomes 125 cm³ at the same pressure, then volume coefficient of the gas at normal pressure is

(1) 0.0015/°C (2) 0.0045/°C (3) 0.0025/°C (4) 0.0033/°C

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7. Ratio among linear expansion coefficient (α), areal expansion coefficient (β) and volume expansion coefficient (γ) is

(1) 1 : 2 : 3   (2) 3 : 2 : 1   (3) 4 : 3 : 2   (4) None of these

8. A cylindrical metal rod of length L_0 is shaped into a ring with a small gap as shown. On heating the system
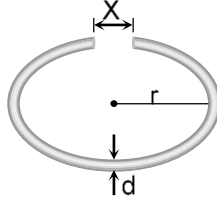
(1) x decreases, r and d increase

(2) x and r increase, d decreases

(3) x, r and d all increase

(4) Data insufficient to arrive at a conclusion

9. Two rods, one of aluminum and the other made of steel, having initial length l_1 and l_2 are connected together to form a single rod of length $l_1 + l_2$. The coefficients of linear expansion for aluminum and steel are α_a and α_s respectively. If the length of each rod increases by the same amount when their temperature are raised by $t^o C$, then find the ratio $\dfrac{l_1}{(l_1 + l_2)}$

(1) $\dfrac{\alpha_s}{\alpha_a}$ (2) $\dfrac{\alpha_a}{\alpha_s}$ (3) $\dfrac{\alpha_s}{(\alpha_a + \alpha_s)}$ (4) $\dfrac{\alpha_a}{(\alpha_a + \alpha_s)}$

10. Two metal strips that constitute a thermostat must necessarily differ in their

(1) Mass

(2) Length

(3) Resistivity

(4) Coefficient of linear expansion

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