

NEET THERMAL PROPERTIES OF MATTER — THERMAL EXPANSION — PYQS

Max. Marks: 24

Questions: 6

Section A (MCQ) — 6 questions

- Q.1** The temperature of a metallic sphere of radius R is increased by a small amount ΔT . If the linear coefficient of thermal expansion of the metal is α , the approximate increase in the volume of the sphere is: [RE-NEET (UG) 2026]

- (1) $6\pi R^3 \alpha \Delta T$ (2) $2\pi R^3 \alpha \Delta T$
(3) $3\pi R^3 \alpha \Delta T$ (4) $4\pi R^3 \alpha \Delta T$

Scan or tap for the full solution 

- Q.2** A metallic bar of Young's modulus, $0.5 \times 10^{11} \text{ N m}^{-2}$ and coefficient of linear thermal expansion $10^{-5} \text{ }^\circ\text{C}^{-1}$, length 1 m and area of cross-section 10^{-3} m^2 is heated from 0°C to 100°C without expansion or bending. The compressive force developed in it is : [NEET (UG) 2024]

- (1) $5 \times 10^3 \text{ N}$ (2) $50 \times 10^3 \text{ N}$
(3) $100 \times 10^3 \text{ N}$ (4) $2 \times 10^3 \text{ N}$

Scan or tap for the full solution 

- Q.3** A copper rod of 88 cm and an aluminium rod of unknown length have their increase in length independent of increase in temperature. The length of aluminium rod is : ($\alpha_{\text{Cu}} = 1.7 \times 10^{-5} \text{ K}^{-1}$ and $\alpha_{\text{Al}} = 2.2 \times 10^{-5} \text{ K}^{-1}$) [NEET (UG) 2019]

- (1) 119.9 cm (2) 88 cm
(3) 68 cm (4) 6.8 cm

Scan or tap for the full solution 

- Q.4** Coefficient of linear expansion of brass and steel rods are α_1 and α_2 . Lengths of brass and steel rods are l_1 and l_2 respectively. If $(l_2 - l_1)$ is maintained same at all temperatures, which one of the following relations holds good? [NEET 2016 (Phase 1)]

- (1) $\alpha_1^2 l_2 = \alpha_2^2 l_1$ (2) $\alpha_1 l_1 = \alpha_2 l_2$
(3) $\alpha_1 l_2 = \alpha_2 l_1$ (4) $\alpha_1 l_2^2 = \alpha_2 l_1^2$

Scan or tap for the full solution 

- Q.5** The value of coefficient of volume expansion of glycerin is $5 \times 10^{-4} \text{ K}^{-1}$. The fractional change in the density of glycerin for a rise of 40°C in its temperature, is [AIPMT 2015]

- (1) 0.025 (2) 0.010 (3) 0.015 (4) 0.020

Scan or tap for the full solution 

- Q.6** The density of water at 20°C is 998 kg/m^3 and at 40°C is 992 kg/m^3 . The coefficient of volume expansion of water is [NEET 2013 (Karnataka)]

- (1) $3 \times 10^{-4}/^\circ\text{C}$ (2) $2 \times 10^{-4}/^\circ\text{C}$
(3) $6 \times 10^{-4}/^\circ\text{C}$ (4) $10 \times 10^{-4}/^\circ\text{C}$

Scan or tap for the full solution 

ANSWER KEY

Ques.	1	2	3	4	5	6					
Ans.	4	2	3	2	4	1					