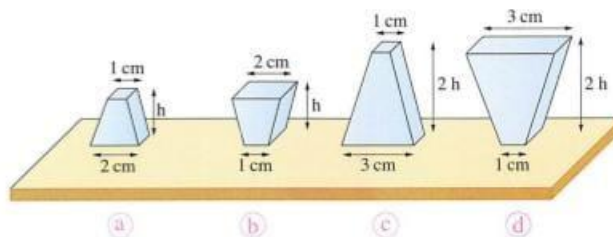




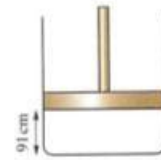


- 1 If the pressure due to a liquid on a point at depth 20 cm under its surface is 10^3 Pa, so the density of the liquid in terms of the acceleration due to gravity (g) is
- a $\frac{5 \times 10^3}{g} \text{ kg/m}^3$ b $\frac{7 \times 10^3}{g} \text{ kg/m}^3$
 c $\frac{10^4}{g} \text{ kg/m}^3$ d $\frac{1.5 \times 10^4}{g} \text{ kg/m}^3$
- 2 Pressure of enclosed gas in a container is 380 torr, then this pressure is equivalent to
 (Where: $g = 10 \text{ m/s}^2$, $\rho_{\text{Hg}} = 13600 \text{ kg/m}^3$)
 a $2.79 \times 10^4 \text{ Pa}$ b $3.83 \times 10^5 \text{ Pa}$ c $5.17 \times 10^4 \text{ Pa}$ d $1.55 \times 10^5 \text{ Pa}$
- 3 Two equal masses of different materials are mixed to form a homogeneous mixture. If their densities are 2000 kg/m^3 and 6000 kg/m^3 and the volume of the mixture equals the summation of the volumes of its materials before mixing, so the average density of the mixture equals
- a 3000 kg/m^3 b 4000 kg/m^3 c 5300 kg/m^3 d 5600 kg/m^3
- 4 U-shaped tube of uniform cross-section, whose vertical height is 80 cm, was filled to its half with glycerin then another liquid is poured in one of its arms until the edge of the tube, so the height of glycerin above the interface between the two liquids equals
 (Where: $\rho_{\text{glycerin}} = 1260 \text{ kg/m}^3$, $\rho_{\text{liquid}} = 945 \text{ kg/m}^3$)
 a 12 cm b 24 cm c 36 cm d 48 cm
- 5 The following figures show four metallic bodies of the same metal and have the same thickness. If they are put on the same horizontal surface, which of them is acting by the largest pressure on the surface?





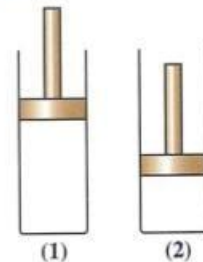
- 17 The opposite figure shows a cylinder of uniform cross-section equipped with a movable frictionless piston trapping a quantity of gas at STP. If the cylinder is exposed to the sun rays and the temperature of the container is increased to 27°C at constant pressure of the gas, then the distance moved by the piston upwards due to the expansion of the gas equals
(Suppose that the cylinder did not expand)



- a 9 cm b 12 cm c 18 cm d 27 cm
- 18 An amount of a gas of volume 120 L is at pressure 0.5 atm and temperature 15°C , then the volume of that quantity at temperature 10°C and pressure 0.25 atm is approximately

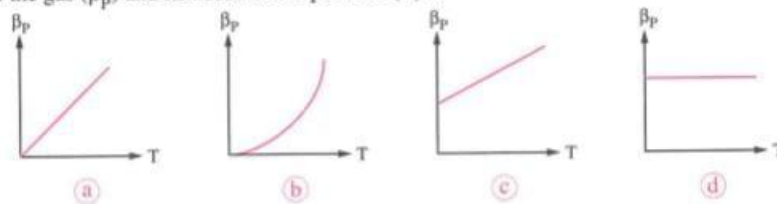
- a 60 L b 111 L c 236 L d 480 L

- 19 Figure (1) shows a cylinder equipped with a frictionless movable piston trapping a quantity of air of volume 0.6 L at pressure 3.5 atm. If the piston is moved downwards at constant temperature as in figure (2), which of the following represents the pressure and the volume of the gas in figure (2)?



- a 3.6 atm, 0.4 L.
b 3.6 atm, 0.3 L.
c 7 atm, 0.4 L.
d 7 atm, 0.3 L.

- 20 Amount of a gas is at pressure P and absolute temperature T. When its temperature is increased by ΔT , its pressure is increased by ΔP at constant volume. Then the graph representing the relation between the pressure increasing coefficient at constant volume of the gas (β_p) and its absolute temperature (T) is





- 25 The temperature of a certain amount of a gas is increased from 0°C to 40°C , so its volume has increased by 50 cm^3 at constant pressure. If the temperature of the same quantity of the gas is increased from 0°C to 60°C , **what** is the increase in its volume at constant pressure?

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- 26 An amount of a gas has volume V_{ol} under a pressure of 2 atm. If its volume is decreased by $\frac{1}{4} V_{\text{ol}}$ at constant temperature, **calculate** the pressure of the gas in the second case.

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