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# PVT Worksheet

**Q1.** The figure shows a gas cylinder with pressure 500 kPa at a temperature of 27°C. What is the temperature when the pressure is increased to 550 kPa?

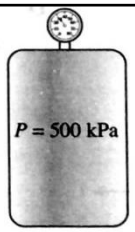


*Figure 1*

**Q2.** The figure shows two identical glass tubes with gas trapped by mercury columns in two different positions. If the atmospheric pressure is 76 cm Hg, determine the values of pressure $P_1$, $P_2$ and the length of the gas column s.

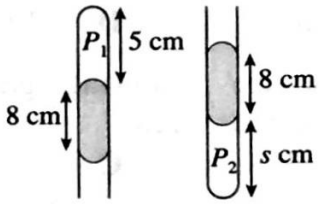


*Figure 2*

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**Q3.** The volume of a hot air balloon is 25 $cm^3$ at 30°C. The balloon is then heated at fixed pressure until its volume is doubled as shown in the figure. Calculate the final temperature, θ, of the gas.

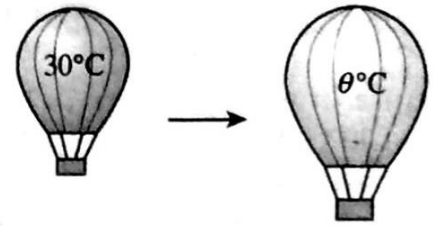


*Figure 3*

**Q4.** The figure shows a beaker inverted and placed on the water surface to trap some air in it. The beaker is then pushed vertically into the water until the length of air trapped in the beaker is l/2 cm. Calculate the depth of the beaker in the water. [Atm pressure = 10m of water]

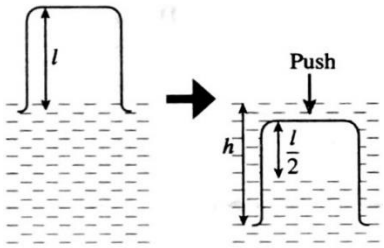


*Figure 4*

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**Q5.** The volume of an air bubble at the depth of h m of a lake is 1.2 $cm^3$. What is the depth of the air bubble if its volume is 1.5 $cm^3$ at the surface of the sea and the atm pressure is 10m of water?

**Q6.** The pressure of a tyre is 18 kPa at temperature 37°C. If the temperature is increased to 87 °C, what is the new pressure in the tyre?

**Q7.** A balloon with volume, V contains a fixed mass of gas at atmospheric pressure and temperature 30°C. If the temperature is increased to 87°C, what is the new pressure in the tyre?

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