



Q1) A fixed mass of a gas occupies  $1.85 \text{ m}^3$  at a pressure of 2 atm. Calculate the volume of the gas at a pressure of 7.5 atm when the temperature does not change.

Q2) a) Calculate in Pa, the pressure difference that will cause a U-tube manometer to have a height difference of 7 cm of mercury pressure between the arms. The density of mercury is  $1.36 \times 10^4 \text{ kg/m}^3$ .  
b) State this pressure difference as a percentage of atmospheric pressure. (atmospheric pressure is 101 kPa).

Q3) The density of olive oil is  $895 \text{ kg/m}^3$ . Calculate the length that an olive oil barometer will have when the atmospheric pressure is 101 kPa.

Q4) A brick has the dimensions of  $25 \text{ cm} \times 15 \text{ cm} \times 30 \text{ cm}$ . The mass of the brick is 15 kg. Calculate the:

- a) Weight of the brick
- b) Maximum Pressure
- c) Minimum Pressure

Q5) A marble is dropped in a 32cm tall tube filled with water, knowing that the density of water is  $10^3 \text{ kg/m}^3$ , find the pressure that is exerted on the marble at the bottom of the tube, **without ignoring atmospheric pressure which is 101 kPa.**