Q) **According to Newton's formula, the speed of sound in air at STP is: (Take the mass of 1 mole of are is $29 \times 10^{-3}\ kg$)**

Ans) 1 mole of any gas occupies 22.4 liters at STP.

Therefore, the density of air at STP is

$$\rho = \frac{\text{Mass of one mole of air}}{\text{Volume of one mole of air at STP}}$$

$$= \frac{29 \times 10^{-3}\ kg}{22.4 \times 10^{-3}\ m^3} = 1.29\ kg\ m^{-3}$$

At STP,

$$P = 1\ atm = 1.01 \times 10^5\ N\ m^{-2}$$

$$V = \sqrt{\left(\frac{P}{\rho}\right)} = \sqrt{\frac{1.01 \times 10^5\ N\ m^{-2}}{1.29 \times kg\ m^{-3}}} = 280\ m\ s^{-1}$$