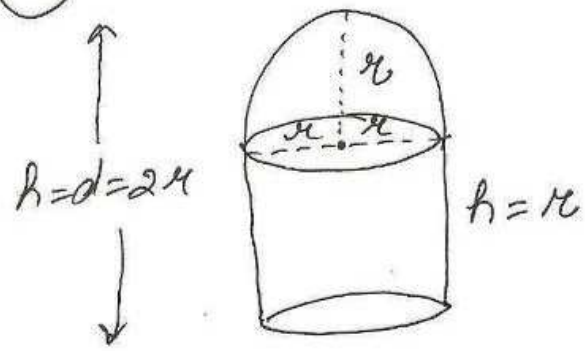
ex 12.4 (EP.)

(15)



volume of air in building
= vol of cylindrical part + vol. of h.s. part

$= \pi r^2 h + \frac{2}{3}\pi r^3$

$= \pi r^2 \left(h + \frac{2}{3} r\right)$

$\therefore \pi r^2 \left(h + \frac{2}{3} r\right) = 41\frac{19}{21}\ m^3$

$\Rightarrow \pi r^2 \left(r + \frac{2}{3} r\right) = \frac{880}{21}$

$\Rightarrow \frac{22}{7} r^2 \times \frac{5}{3} r = \frac{880}{21}$

$\Rightarrow r^3 = \frac{40}{5}$

$\Rightarrow r^3 = 2^3$

$\Rightarrow r = 2\ m$

$\therefore$ height of building = diameter
$= 2r$
$= 2 \times 2$
$= 4\ m$