Exercise 13B

Question 11:

$1cm^3 = 1\ cm \times 1cm \times 1cm$ and $1cm = 0.01m$

Therefore,

Volume of the

gold $= 0.01m \times 0.01m \times 0.01m = 0.000001m^3$.....(1)

Diameter of the wire drawn = 0.1 mm

Radius of the wire drawn $= \frac{0.1}{2}mm = 0.05mm$

$r = 0.00005\ m$ .....(2)

Length of the wire = h m .....(3)

Volume of the wire drawn = Volume of the gold

$\Rightarrow \pi r^2 h = 0.000001$

$\Rightarrow \pi \times 0.00005 \times 0.00005 \times h = 0.000001$ [from equations (1), (2) and (3)]

$$h = \frac{0.000001 \times 7}{0.00005 \times 0.00005 \times 22}$$

$\therefore \quad h = 127.27m$

$\therefore$ the length of the wire is 127.27m

Question 12:

Let the radii of the two cylinders be 2R and 3R.

And their heights be 5H and 3H.

$$\text{Then, } \frac{V_1}{V_2} = \frac{\pi \times (2R)^2 \times 5H}{\pi \times (3R)^2 \times 3H} = \frac{\pi \times 4R^2}{\pi \times 9R^2} \times \frac{5H}{3H} = \frac{20}{27}$$

$\therefore$ the ratio of their volumes = 20:27

$$\text{Now, } \frac{S_1}{S_2} = \frac{2\pi(2R)(5H)}{2\pi(3R)(3H)} = \frac{10}{9}$$

$\therefore$ the ratio of their curved surface = 10 : 9

Question 13:

For the tin having square base,

side = 12 cm and height = 17.5 cm.

$\therefore$ Volume $= (12 \times 12 \times 17.5)cm^3 = 2520\ cm^3$

Now, diameter of tin with cylindrical base = 12 cm

$\therefore$ radius $= \left(\frac{12}{2}\right)cm = 6cm$ and height = 17.5 cm

$\therefore$ Volume $= \left(\frac{22}{7} \times 6 \times 6 \times 17.5\right)cm^3 = 1980\ cm^3$

Tin with square base has more capacity by $(2520 - 1980)cm^3$

$= 540\ cm^3$.

********** END **********