Exercise 19B

Question 13:

Diameter of sphere = 42 cm

Radius of sphere = $\left(\frac{42}{2}\right)$ cm = 21 cm

Volume of sphere = $\frac{4}{3}\pi r^3 = \left(\frac{4}{3} \times \pi \times 21 \times 21 \times 21\right) cm^3$

Diameter of cylindrical wire = 2.8 cm

Radius of cylindrical wire = $\left(\frac{2.8}{2}\right)$ cm = 1.4 cm

Volume of cylindrical wire = $\pi r^2 h = (\pi \times 1.4 \times 1.4 \times h) cm^3$

$= (1.96\pi h) cm^3$

Volume of cylindrical wire = volume of sphere

$\therefore 1.96\pi h = \frac{4}{3} \times \pi \times 21 \times 21 \times 21$

$h = \left(\frac{4}{3} \times \pi \times 21 \times 21 \times 21 \times \frac{1}{1.96} \times \frac{1}{\pi}\right) cm$

$h = 6300$

$h\left(\frac{6300}{100}\right) m = 63$ m

Hence length of the wire 63 m.

Question 14:

Diameter of sphere = 6 cm

Radius of sphere = $\left(\frac{6}{2}\right)$ cm = 3 cm

Volume of sphere = $\frac{4}{3}\pi r^3 = \left(\frac{4}{3} \times \pi \times 3 \times 3 \times 3\right) cm^3$

$= (36\pi) cm^3$

Radius of wire = $\left(\frac{2}{2}\right)$ mm = 1 mm = 0.1 cm

Volume of wire = $\pi r^2 l = \left(\pi \times (0.1)^2 \times l\right) cm^2 = 0.01\ \pi l\ cm^2$

$36\ \pi = 0.01\ \pi l$

$l = \frac{36}{0.01} = 3600$ cm

Length of wire = $\left(\frac{3600}{100}\right)$ m = 36m

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