Exercise 13D

Question 10:

Here, radius of sphere $= 10.5\,cm = \left(\dfrac{21}{2}\right)cm$

Radius of smaller cone $= 3.5\,cm = \left(\dfrac{7}{2}\right)cm$ and height $= 3\,cm$

$\text{Now number of cones} = \dfrac{\text{Volume of the sphere}}{\text{Volume of 1 small cone}}$

$= \dfrac{\left\{\dfrac{4}{3}\pi \times \left(\dfrac{21}{2}\right)^{3}\ cm^{3}\right\}}{\left\{\dfrac{1}{3}\pi \times \left(\dfrac{7}{2}\right)^{2} \times 3\ cm^{3}\right\}}$

$= \left(\dfrac{\dfrac{4}{3} \times \dfrac{9261}{8}}{\dfrac{1}{3} \times \dfrac{49}{4} \times 3}\right) = \dfrac{\dfrac{9261}{6}}{\dfrac{49}{4}}$

$= \dfrac{9261}{6} \times \dfrac{4}{49} = 126$

∴ Number of cones obtained $= 126.$

Question 11:

Diameter of a sphere $= 12\,cm$

$\text{radius} = \dfrac{\text{Diameter}}{2}$

$= \dfrac{12}{2}$

$= 6\,cm$

∴ Volume of the sphere $= \dfrac{4}{3}\pi r^{3}$

$= \dfrac{4}{3} \times \dfrac{22}{7} \times 6 \times 6 \times 6$ (i)

Diameter of cylinder $= 8\,cm$

Radius of cylinder $= \dfrac{\text{Diameter}}{2}$

Radius of cylinder $= \dfrac{8}{2}$

Radius of cylinder $= 4\,cm$

Height of the cylinder $= 90\,cm$

∴ Volume of the cylinder $= \pi r^{2}h$

$= \dfrac{22}{7} \times 4 \times 4 \times 90$ (ii)

$\text{Number of spheres} = \dfrac{\text{Volume of cylinder}}{\text{Volume of sphere}}$

$\text{Number of spheres} = \dfrac{\dfrac{22}{7} \times 4 \times 4 \times 90\ cm^{3}}{\dfrac{4}{3} \times \dfrac{22}{7} \times 6 \times 6 \times 6\ cm^{3}}\ [(ii) \div (i)]$

Number of spheres $= 5.$

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