Surface Areas and Volumes Ex.16.1 Q7

Answer :

We have 50 circular plates, each with diameter = 14 cm

That is, radius = 7 cm and thickness = 0.5 cm

These plates are stacked on top of one another.

So, the total thickness $= 0.5 \times 50 \text{ cm} = 25 \text{ cm}$

This is clearly a cylindrical arrangement.

We know,

Total surface area of a cylinder $= 2\pi rh + 2\pi r^2$

$= 2\pi r(h + r)$

$= 2\pi \times 7(25 + 7)$

$= 448\pi$

$= 1408$

So, the total surface area of the given arrangement is 1408 cm^2

Surface Areas and Volumes Ex.16.1 Q8

Answer :

We have 25 circular plates, each with radius = 10.5 cm and thickness = 1.6 cm

These plates are stacked on top of one another.

So, the total height of the arrangement becomes $= 1.6 \times 25 = 40 \text{ cm}$

Volume of this arrangement $= \pi r^2 h = \pi (10.5)^2 \times 40 = 13860 \text{ cm}^3$

Curved surface area $= 2\pi rh = 2\pi \times 10.5 \times 40 = 2640 \text{ cm}^2$

Hence $\boxed{\text{volume} = 13860 \text{ cm}^3}$ and $\boxed{\text{C.S.A} = 2640 \text{ cm}^2}$

Surface Areas and Volumes Ex.16.1 Q9

Answer :

Diameter of the circular pond is given = 40 m

So, the radius of this pond is 20 m

There is a path surrounding the pond. We are given the thickness of this path as 2 m

We have to grave this path with gravel. The depth of the path is also given 20 cm=0.2 m

This circular path can be viewed as a hollow cylinder of thickness 0.2 m and depth 0.2 m

We know,

Volume of a hollow cylinder $= \pi h(R^2 - r^2)$

So the volume of the circular path with height 0.2 m

$= \pi \times 0.2(22^2 - 20^2)$

$= \pi \times 0.2(484 - 400^2)$

$= \pi \times 0.2 \times 84$

$= 52.77 \text{ m}^3$

Hence, the volume of gravel required is 52.77 m^3

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