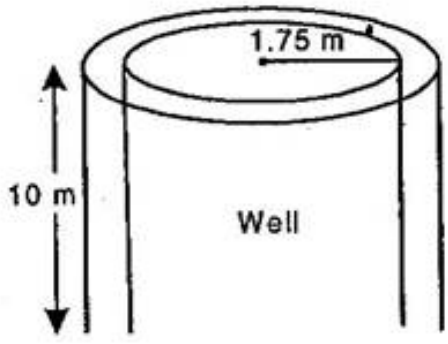
Exercise 13.2

7. The inner diameter of a circular well is 3.5 m. It is 10 m deep. Find:

(i) its inner curved surface area.

(ii) thecosr of plastering this curved surface at the rate of Rs. 40 per m^2.



Ans. Inner diameter of circular well = 3.5 m

$\therefore$ Inner radius of circular well

$= \frac{3.5}{2} = 1.75$ m

And Depth of the well = 10 m

(i) Inner surface area of the well = $2\pi rh$

$= 2 \times \frac{22}{7} \times 1.75 \times 10 = 110 \text{ m}^2$

(ii) Cost of plastering 1 m^2 = Rs. 40

Cost of plastering 100 m^2 = 40 x 110 = Rs. 4400

8. Find:

(i) the lateral or curved surface area of a petrol storage tank that is 4.2 m in diameter and 4.5 m high.

(ii) how much steel was actually used if $\frac{1}{12}$ of the steel actually used was wasted in making the tank?

Ans. The length (height) of the cylindrical pipe = 28 m

Diameter = 5 cm

$\Rightarrow$ Radius = $\frac{5}{2}$ cm

$\therefore$ Curved surface area of the pipe = $2\pi rh$

$= 2\times\frac{22}{7}\times\frac{5}{2}\times 2800 = 44000 \text{ cm}^2 = \frac{44000}{10000} = 4.4 \text{ m}^2$

Ans. **(i)** Diameter of cylindrical petrol tank = 4.2 m

$\therefore$ Radius of the cylindrical petrol tank

$= \frac{4.2}{2} = 2.1$ m

And Height of the tank = 4.5 m

$\therefore$ Curved surface area of the cylindrical tank = $2\pi rh$

$= 2\times\frac{22}{7}\times 2.1\times 1.45 = 59.4 \text{ m}^2$

(ii) Let the actual area of steel used be x meters

Since $\frac{1}{12}$ of the actual steel used was wasted, the area of steel which has gone into the tank.

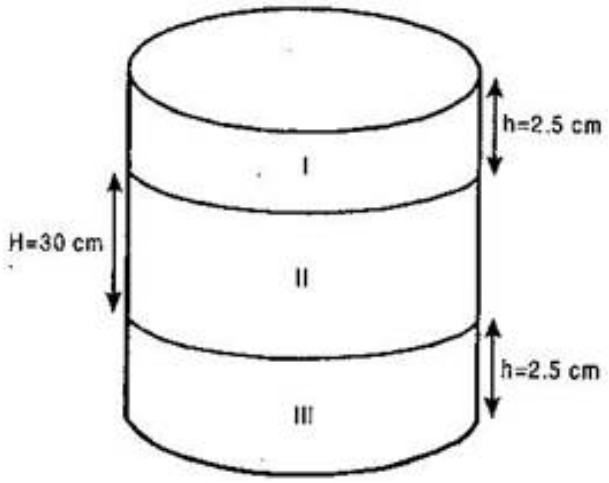
$= x-\frac{1}{12}x = \frac{11}{12}x$

$\therefore \frac{11}{12}x = 59.4$

$\Rightarrow x = 59.4\times\frac{12}{11} = 64.8 \text{ m}^2$

Hence steel actually used is 64.8 m^2.

9. In the adjoining figure, you see the frame of a lampshade. It is to be covered with a decorative cloth. The frame has a base diameter of 20 cm and height of 30 cm. A margin of 2.5 cm is to be given for folding it over the top and bottom of the frame. Find how much cloth is required for covering the lampshade. [See fig.]



Ans. Height of each of the folding at the top and bottom (h) = 2.5 cm

Height of the frame (H) = 30 cm

Diameter = 20 cm

$\Rightarrow$ Radius = 10 cm

Now cloth required for covering the lampshade

= CSA of top part + CSA of middle part + CSA of bottom part

$= 2\pi rh + 2\pi r\mathrm{H} + 2\pi rh$

$= 2\pi r(h + \mathrm{H} + h)$

$= 2\pi r(\mathrm{H} + 2h)$

$= 2\dfrac{22}{7} \times 10(30 + 2 \times 2.5)$

$= 2200 \text{ cm}^2$

10. The students of a Vidyalayawere asked to participate in a competition for making and decorating penholders in the shape of a cylinder with a base, using cardboard. Each penholder was to be of radius 3 cm and height 10.5 cm. The Vidyalaya was to supply the competitors with cardboard. If there were 35 competitors, how much cardboard was required to be bought for the competition?

Ans. Radius of a cylindrical pen holder (r) = 3 cm

Height of the cylindrical pen holder (h)

= 10.5 cm

Cardboard required for pen holder = CSA of pen holder + Area of circular base

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

$= \frac{22}{7} \times 3(2 \times 10.5 + 3) = 226.28 \text{ cm}^2$

Since Cardboard required for making 1 pen holder = 226.28 cm^2

$\therefore$ Cardboard required for making 35 pen holders = 226.28 x 35 = 7919.8 cm^2

= 7920 cm^2 (approx.)

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