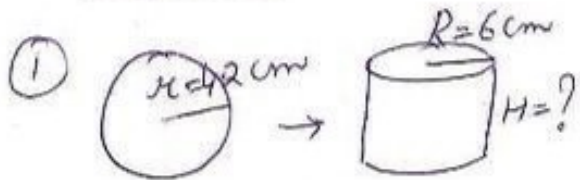


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ex 13.3



vol. of cyl = vol of sph.

$$\pi R^2 H = \frac{4}{3} \pi r^3$$

$$26 \times 6 \times H = \frac{4}{3} \times 1.4 \times 1.4 \times 1.4 \times 2^3$$

$$\Rightarrow H = 1.4^3 \times \frac{3}{8}$$

$$= 2.744$$

\therefore height of cyl. = 2.744 cm



vol of new sphere = vol of three given sph.

$$\frac{4}{3} \pi r_4^3 = \frac{4}{3} \pi (r_1^3 + r_2^3 + r_3^3)$$

$$= 6^3 + 8^3 + 10^3$$

$$= 216 + 512 + 1000$$

$$= 1728$$

$$r_4 = \sqrt[3]{1728}$$

$$= 12 \text{ cm}$$

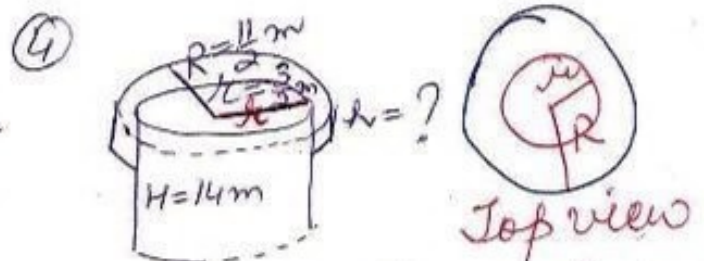
vol of earth spread = vol of earth taken out

$$\pi R^2 H = lbh$$

$$\frac{\pi}{7} \times \frac{7}{2} \times \frac{7}{2} \times 20 = \frac{22}{7} \times 14 \times h$$

$$\Rightarrow h = \frac{10}{4}$$

$$= 2.5 \text{ m}$$



vol of earth dug = vol of earth spread

$$\pi r^2 H = \pi h (R^2 - r^2)$$

$$\frac{3}{2} \times \frac{3}{2} \times 14 = h \left[\left(\frac{11}{2} \right)^2 - \left(\frac{3}{2} \right)^2 \right]$$

$$\Rightarrow \frac{3 \times 3 \times 7}{2} = h \times \frac{8^4}{2} \times \frac{14}{2}$$

[using $a^2 - b^2 = (a-b)(a+b)$]

$$\Rightarrow \frac{9}{8} = h$$

$$\Rightarrow h = 1.125 \text{ m}$$

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