Chapter: 12

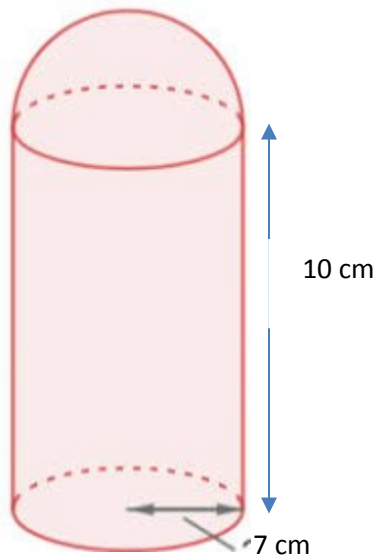
Volume & Surface area

Assignment of part 3 ; (Text book pg.no : 347)

Exercise 12 D:

Q3) A Solid consists of a Hemispher and a Cylinder which share a common base. The Cylinder has a base radius of 7cm and a height of 10cm. Find the

i) Volume
ii) Total Surface area of the solid



Given : Radius (r) = 7 cm
Height of the cylinder = 10 cm

Solution:

(i) Volume of the solid

= Volume of hemisphere + volume of cylinder = (½ x 4/3 x ∏ x r^3) + (∏ x r x h)

= 1/2× 4/3 × π × 7^3 + π × 72 × 10

= 228 (2/3) π + 490π

= 718 (2/3) π

= 718 x 2/3 x 22/7
= 2260 cm^3

(ii) Total surface area of the solid

= Flat surface of cylinder + curved surface area of cylinder +

curved surface area of hemisphere = $\prod r^2 + 2\prod rh + 2\prod r^2$

$= \pi \times 7^2 + 2 \times \pi \times 7 \times 10 + 2 \times \pi \times 7^2$

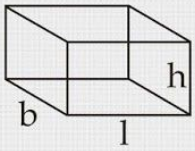
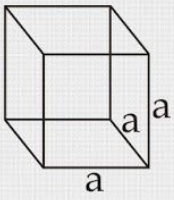
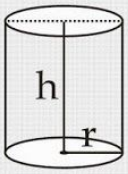
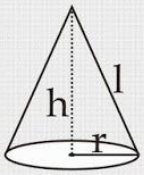
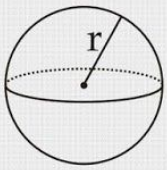
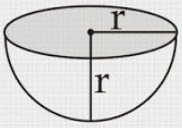
$= 49\pi + 140\pi + 98\pi$

$= 287\pi$

$= 287 \times 22/7$

$= (6314) / 7$

$= 902\ cm^2$

Name of the solid	Figure	Volume	Laterial/Curved Surface Area	Total Surface Area
Cuboid		lbh	$2lh + 2bh$ or $2h(l+b)$	$2lh+2bh+2lb$ or $2(lh+bh+lb)$
Cube		a^3	$4a^2$	$4a^2+2a^2$ or $6a^2$
Right circular cylinder		πr^2h	$2\pi rh$	$2\pi rh + 2\pi r^2$ or $2\pi r(h+r)$
Right circular cone		$\frac{1}{3}\pi r^2h$	πrl	$\pi rl + \pi r^2$ or $\pi r(l+r)$
Sphere		$\frac{4}{3}\pi r^3$	$4\pi r^2$	$4\pi r^2$
Hemisphere		$\frac{2}{3}\pi r^3$	$2\pi r^2$	$2\pi r^2+\pi r^2$ or $3\pi r^2$