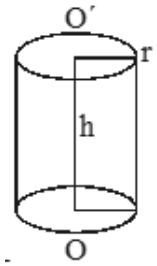
SURFACE AREAS AND VOLUMES

CYLINDER

Right circular cylinder

For a right circular cylinder of base radius r and height h, we have -



(i) Area of each end = area of base = $p\ r^2$

(ii) Curved surface area $= 2\ prh$

(iii) Total surface area = curved surface area + area of circular ends

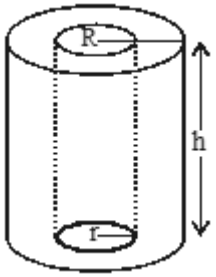
$= 2\ prh + 2pr^2$

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

Right circular hollow cylinder

Let R and r be the external and internal radii of a hollow cylinder of height h, then

(i) Area of each end = $p\ (R^2 - r^2)$



(ii) Curved surface area of hollow cylinder

= External surface area + Internal surface area

$= 2\ p\ Rh + 2\ p\ rh = 2\ p\ h\ (R + r)$

(iii) Total surface area

$= 2\ pRh + 2\ prh + 2\ p(R^2 - r^2)$

$= 2\ ph\ (R + r) + 2\ p(R+r)\ (R-r)$

$= 2\ p\ (R+r)\ (R+h-r)$

(iv) Volume of material = External volume – Internal volume

$= p\ R^2\ h - p\ r^2 h$

$= p\ h\ (R^2 - r^2)$