$$\text{Volume} = \int_R \int_{z=x^2+y^2} \int^{2y} dz\,dx\,dy$$

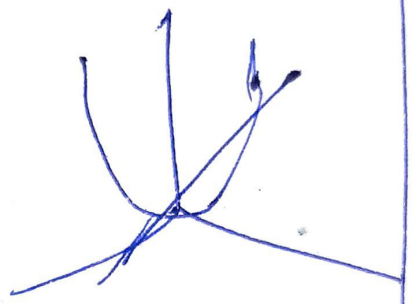
$$R: \; x^2+y^2 = 2y$$

$$\Rightarrow \iint_R (2y - x^2 - y^2)\,dx\,dy$$

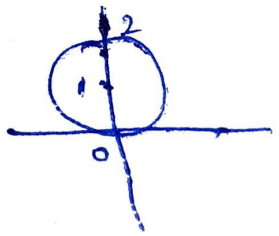
$$\Rightarrow -\iint_R [x^2+(y-1)^2-1]\,dx\,dy$$

but $x = X$ & $y-1 = Y$

$dx = dX$ & $dy = dY$



$$R: \; x^2 + (y-1)^2 = 1$$



$$\Rightarrow -\iint_R (x^2+y^2-1)\,dx\,dy$$

$$R: \; x^2+y^2 = 1$$

$$\Rightarrow \iint_R dx\,dy - \iint_R x^2+y^2\,dx\,dy$$

$$\Rightarrow 2\pi - \int_{\theta=0}^{2\pi}\int_{r=0}^{1} r^3\,dr\,d\theta$$

$$\Rightarrow 2\pi - \frac{2\pi}{4}$$

$$\Rightarrow 2\pi - \frac{\pi}{2} = \boxed{\frac{3\pi}{2}}$$ Ans