Calculate the torque developed by an airplane engine whose output is 2000 HP at an angular velocity of 2400 rev/min.

**Solution :**

$$\omega = 2\pi(2400/60) = 80\pi \text{ rad/s}$$

Work done by torque = (torque) × (angular displacement)

$$\text{Power} = \text{work done per sec} = \tau\frac{\Delta\theta}{\Delta t}$$

$$\text{Power} = \tau\omega \Rightarrow \tau = \frac{2000\times 746}{80\pi} = 5937\,\text{Nm}$$