Torsion in Shafts. Question 5-42 Solution

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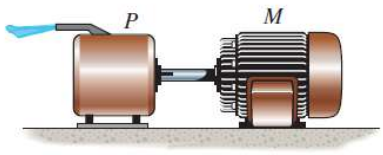

Solution:-

$$\frac{\tau}{R} = \frac{T}{J} \Rightarrow \left[\frac{80\times10^{6}}{\frac{0.06}{2}} = \frac{60\times10^{3}/\omega}{\frac{\pi}{2}\left(\frac{0.06}{2}\right)^{4}} \right] \rightarrow \text{solving for } \omega \text{ gives:}$$

$$\omega = 17.68 \text{ rad/s} \quad \text{Ans.}$$