$$\ddot{\Omega} = n\Omega^{n-1}\dot{\Omega}$$

But from the question:

$$\Omega^{n-1} = \frac{\dot{\Omega}}{\Omega} \text{, and so:}$$

$$\ddot{\Omega} = n\frac{\dot{\Omega}}{\Omega}\dot{\Omega} \text{, and therefore:}$$

$$n = \frac{\ddot{\Omega}\Omega}{\dot{\Omega}^2}$$

For magnetic dipole radiation:

$$\dot{E} = I\Omega\dot{\Omega} = \frac{2}{3c^2}(BR^2\sin a)^2\Omega^4$$

Therefore, $\dot{\Omega} \propto \Omega^3$, and therefore n = 3.

Answer: n = 3

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