

27 An aeroplane makes a complete quarter circle of 40m radius towards left when flying at 175 km/hr. The mass of rotary engine and propeller is 400 kg with $k = 300 \text{ mm}$, its speed engine = 2500 rpm clockwise when viewed from the rear.

Find the gyroscopic couple on the aircraft which will be the effect, by the aeroplane turn towards right instead of left.

7 Soln

$$r = 40 \text{ m}$$
$$V = 175 \text{ km/hr}$$
$$= 175 \times \frac{5}{18} = 48.61 \text{ m/s}$$

$$m = 400 \text{ kg}$$

$$k = 0.3 \text{ m}$$

$$N = 2500 \text{ rpm}$$

$$\omega = \frac{2\pi N}{60} = 261.79 \text{ rad/s}$$