Question 4) A wheel rotating with an angular speed of 600 rpm is given a constant acceleration of 1800 rpm^2 for 10 sec. The number of revolutions revolved by the wheel is

(A) 125

(B) 100

(C) 75

(D) 50

Solution:

$$\omega_o = 600\ rpm$$
$$\alpha = 1800\ rpm^2$$
$$t = 10\ sec = \frac{1}{6}\ min$$
$$\theta = \omega_o t + \frac{1}{2}\alpha t^2$$
$$\theta = 600 \times \frac{10}{60} + \frac{1}{2} \times 1800 \times \frac{1}{36}$$
$$\theta = 100 + 25 = 125 \text{ revolutions}$$