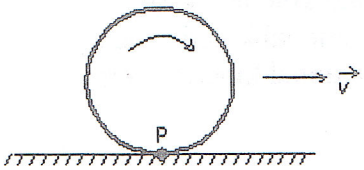
46. A wheel rolls without slipping along a horizontal road as shown. The velocity of the center of the wheel is represented by →. Point P is painted on the rim of the wheel. The instantaneous velocity of point P is:



A) →
B) ←
C) ↑
D) ↗
E) zero

47. A uniform disk has radius R and mass M. When it is spinning with angular velocity ω about an axis through its center and perpendicular to its face its angular momentum is $I\omega$. When it is spinning with the same angle velocity about a parallel axis a distance h away its angular momentum is:

A) $I\omega$
B) $(I + Mh^2)\omega$
C) $(I - Mh^2)\omega$
D) $(I + MR^2)\omega$
E) $(I - MR^2)\omega$

48. Ten seconds after an electric fan is turned on, the fan rotates at 300 rev/min. Its average angular acceleration is:

A) 3.14 rad/s^2
B) 30 rad/s^2
C) 30 rev/s^2
D) 50 rev/min^2
E) 1800 rev/s^2

300 rev/min

0 10

49. A wheel initially has an angular velocity of 18 rad/s but it is slowing at a rate of 2.0 rad/s^2. By the time it stops it will have turned through:

A) 81 rad
B) 160 rad
C) 245 rad
D) 330 rad
E) 410 rad

$\theta = \omega_i t + \frac{1}{2}\alpha t^2$

$18(9) + \frac{1}{2}(-2)(9)^2$

$\omega_f = \omega_i + \alpha t$

$0 = 18 - 2t$

$t = 9\ s$