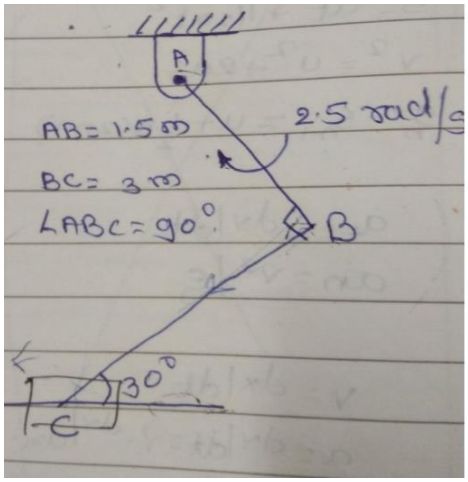
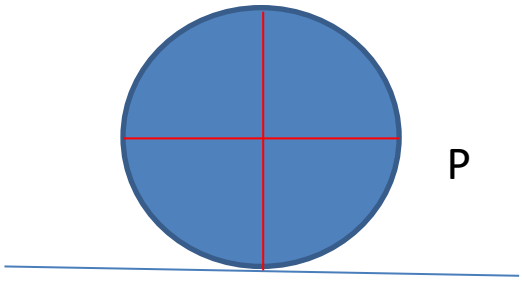
2.2 ICR Method

1. A rod AB 26 m long leans against a vertical wall. The end A on the floor is drawn away from the wall at a rate of 24 m/s. When the end A of the rod is 10 m from the wall, determine the velocity of B sliding down vertically and the angular velocity of the rod.

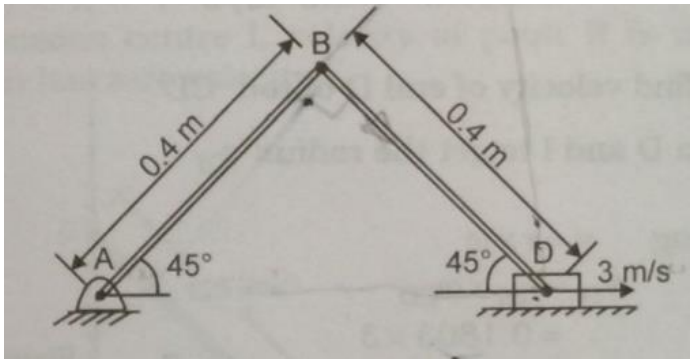
2. At the instant shown in figure, the rod AB is rotating clockwise at 2.5 rad/sec. If the end C of the rod BC is free to move on horizontal surface, find the angular velocity of the point C.



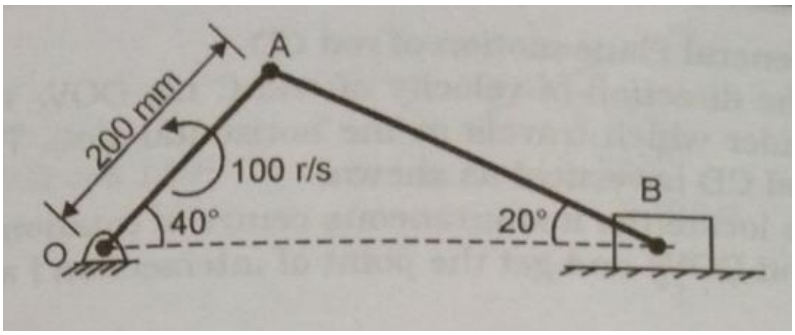
3. A wheel of radius o.75 m rolls without slipping on a horizontal surface to right. Determine the velocities of the points P and Q shown in figure when the velocity of the wheel is 10 m/s towards right.



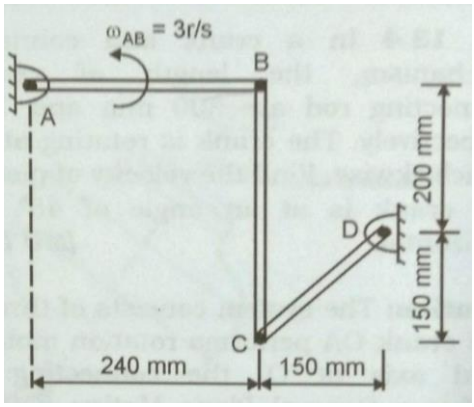
4. Block D shown in figure moves with a speed of 3 m/s. Determine the angular velocities of link BD and AB and the velocity of point B at the instant shown.



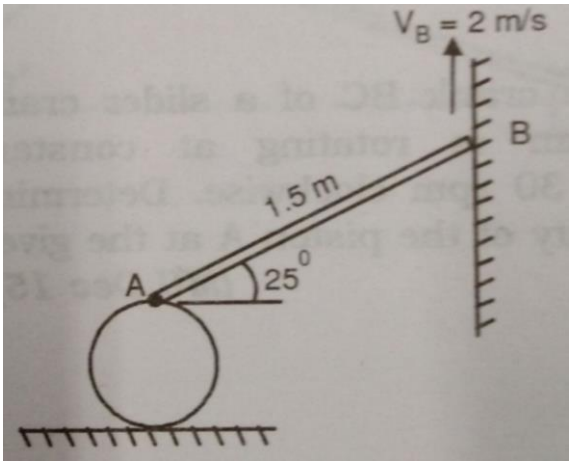
5. A slider crank mechanism is shown in the figure. The crank OA rotates anticlockwise at 100 rad/sec. Find the angular velocity of the rod AB and the velocity of the slider B.



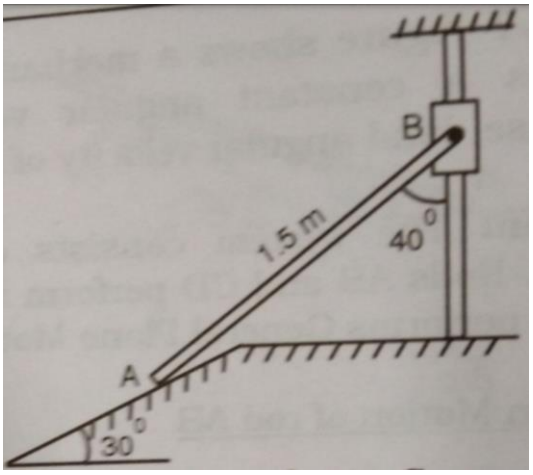
6. In the position shown, bar AB has constant angular velocity of 3 rad/sec anticlockwise, determine the angular velocity of bar CD.



7. One end of rod AB is pinned to the cylinder of diameter 0.5 m while the other end slides vertically up the wall with a uniform speed 2 m/s. For the instant, when the end A is vertically over the center of the cylinder, find the angular velocity of the cylinder, assuming it to roll without slip.



8. Figure shows a collar B which moves up with constant velocity of 2 m/s. To the collar is pinned a rod AB, the end A of which slides freely against a 30° sloping ground. For this instant, determine the angular velocity of the rod and velocity of end A of the rod.



9. Locate the Instantaneous center of rotation for the link ABC and determine the velocity of points B and C. Angular velocity of rod OA is 15 rad/sec counter clock wise. Length of OA is 200 mm, AB is 400 mm and BC is 150 mm.