1. In a four-link mechanism, the dimensions of the links are as under:

   $AB$ = 50 mm, $BC$ = 66 mm, $CD$ = 56 mm and $AD$ = 100 mm. $AD$ is fixed link. At an instant when $DAC$ is 60˚, the angular velocity of the input link $AB$ is 10.5 rad/s in the counter-clockwise direction with an angular retardation of 26 rad/s². Determine analytically the angular displacements, angular velocities and angular accelerations of the output link $DC$ and the coupler $BC$.

2. In a slider-crank mechanism, the lengths of the crank and the connecting rod are 480 mm and 1.6 m respectively. It has an eccentricity of 100 mm. Assuming a velocity of 20 rad/s of the crank $OA$, calculate the following at an interval of 30˚

   i. Velocity and the acceleration of the slider

   ii. Angular velocity and angular acceleration of the connecting rod

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