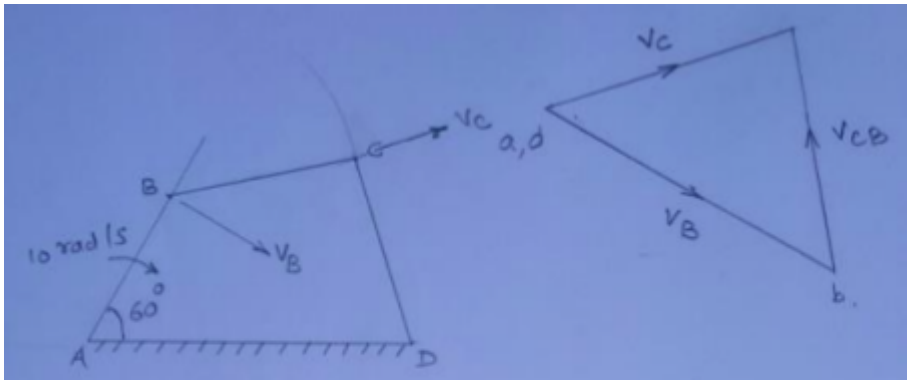

In a four bar mechanism ABCD link AD is fixed and the crank AB rotates at 10 rad.....

Question:
In a four bar mechanism ABCD link AD is fixed and the crank AB rotates at 10 radians per second in clockwise, lengths of the links are AB = 60 mm, BC = CD = 70 mm, DA = 120 mm, when angle DAB = 60□ and both B and C lie on the same side of AB, find angular velocities of BC and CD link.

Answer:



Space diagram
(scale 1 : 2)

velocity Diagram
(Scale 1cm = 0.1 m/s)

Given: AB = 60 mm = 0.06 m
BC = CD = 70mm = 0.07 m
AD = 120 mm = 0.12 m.
ω_{BA} = 10 rad/sec.

velocity of crank 'AB'.

$V_{BA} = V_B = \omega_{BA} \times AB$
$= 10 \times 0.06$
$V_B = 0.6$ m/s

Angular velo. of link 'BC';
V_{BC} = vector bc x scale.
$= 4.4 \times 0.1 = 0.44$ m/s
$\therefore \omega_{BC} = V_{BC}/BC = 0.44/0.07$
$= 6.28$ rad/sec. ——— Ans

Angular velocity of Link 'CD';
$V_{CD} = V_c$ = vector cd x scale
$= 4.6 \times 0.1 = 0.46$ m/s
$\omega_{CD} = V_{CD}/CD = 0.46/0.07$
$= 6.57$ rad/sec ——— Ans