

1) The link AB has an angular velocity of 3 rad/s. Determine the velocity of block C and the angular velocity of link BC at the instant  $\theta = 45^{\circ}$ . Also, sketch the position of link BC when  $\theta = 60^{\circ}, 45^{\circ}$ , and  $30^{\circ}$  to show its general plane motion. (Answer:  $v_c = 1.06 \text{ m/s}$ ,  $\omega_{BC} = 0.707 \text{ rad/s}$ )



2) A double pulley is attached to a slider block by a pin at A. The 30-mm-radius inner pulley is rigidly attached to the 60-mm-radius outer pulley. Knowing that each of the two cords is pulled at a constant speed as shown, determine (a) the instantaneous center of rotation of the double pulley, (b) the velocity of the slider block, (c) the number of millimeters of cord wrapped or unwrapped on each pulley per second. (Answer: a) 10 mm b)  $v_A = 40 \text{ mm/s}$ , c) 240 mm/s, 120 mm/s )





4) A uniform rectangular plate has a mass of 5 kg and is held in position by three ropes as shown. Knowing that  $\theta = 30^{\circ}$ , determine, immediately after rope CF has been cut, (a) the acceleration of the plate, (b) the tension in ropes AD and BE. (Answer: a) 4.91 m/s<sup>2</sup> b)  $T_{AD} = 31.04$  N,  $T_{BE} = 11.43$  N)





## **HOMEWORK HOURS**

Assist. Prof. Çağrı MOLLAMAHMUTOĞLU (GROUP: 3) 07. 12. 201711:00 - 17:00Res. Assist. Yüşa Gökhan DURGUNAssist. Prof. Yıldırım Serhat ERDOĞAN (GROUP: 4)07. 12. 201711:00 - 17:00Room: 2 - 030

NOTE: Homeworks will be delivered by hand.