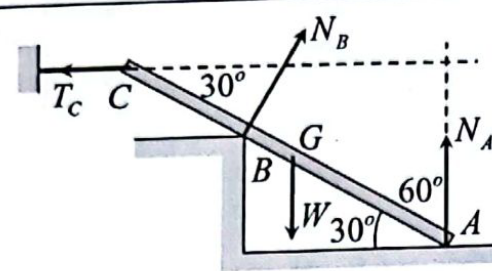
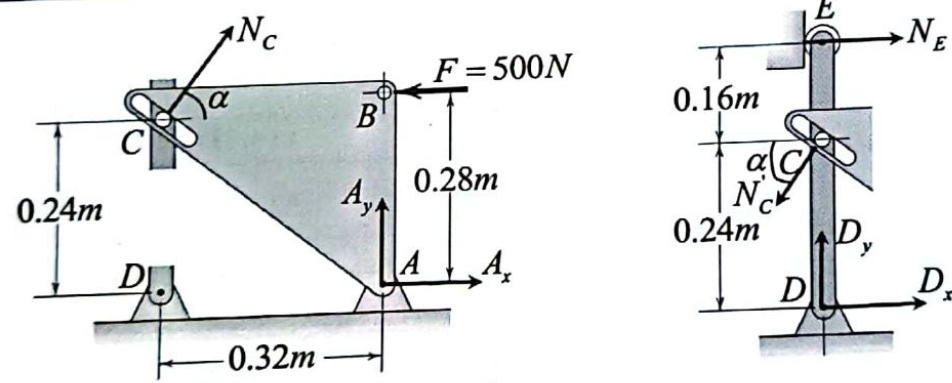
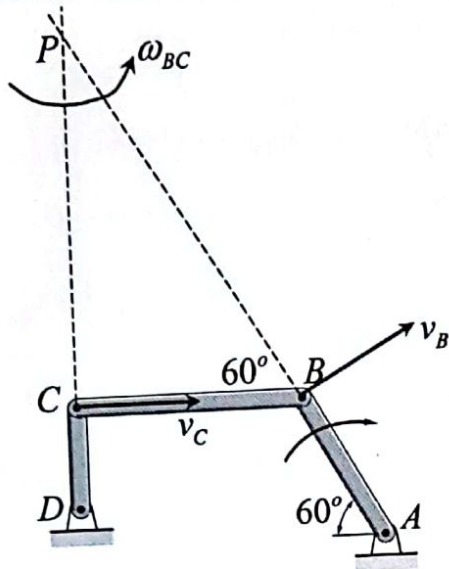


Câu 1	 <p> <math>W = 40 \times 9.81 = 392.4N</math>; <math>AB = 6m</math>; <math>BC = 2.5m</math>; <math>AC = 8.5m</math>; <math>AG = 4.25m</math> </p>	1.5đ 0.5đ
	$\sum \bar{F}_{ix} = 0 \Rightarrow +N_B \cos 60^\circ - T_C = 0$	0.25đ
	$\sum \bar{F}_{iy} = 0 \Rightarrow -W + N_A + N_B \cos 30^\circ = 0$	0.25đ
	$\sum \bar{m}_A = 0 \Rightarrow +W \cdot 4.25 \cos 30^\circ - N_B \cdot 6 + T_C \cdot 8.5 \cos 60^\circ = 0$	0.25đ
	Giải hệ 3 phương trình: $T_C = 186.3575N$ ; $N_B = 372.715N$ ; $N_A = 69.619N$	0.25đ

Câu 2	 <p> <math>\alpha = \arctan(0.32/0.24) = 53.13^\circ</math>; <math>F = 500N</math> </p>	0.5đ
	Xét cân bằng của tam giác:	0.5đ
	$\sum \bar{m}_A = 0 \Rightarrow +F \cdot 0.28 - N_C \cdot \sqrt{0.24^2 + 0.32^2} = 0 \Rightarrow N_C = 350N$	0.25đ
	$\sum \bar{F}_{ix} = 0 \Rightarrow -F + A_x + N_C \cos \alpha = 0 \Rightarrow A_x = 290N$	0.25đ
	$\sum \bar{F}_{iy} = 0 \Rightarrow +A_y + N_C \sin \alpha = 0 \Rightarrow A_y = -280N$	0.5đ
	Xét cân bằng của thanh DCE: $\vec{N}'_C \uparrow \downarrow \vec{N}_C$ ; $N'_C = N_C = 350N$	0.25đ
	$\sum \bar{m}_D = 0 \Rightarrow +N'_C \cos \alpha \cdot 0.24 - N_E \cdot 0.4 = 0 \Rightarrow N_E = 126N$	0.25đ
	$\sum \bar{F}_{ix} = 0 \Rightarrow -N'_C \cos \alpha + D_x + N_E = 0 \Rightarrow D_x = 84N$	0.25đ
	$\sum \bar{F}_{iy} = 0 \Rightarrow -N'_C \sin \alpha + D_y = 0 \Rightarrow D_y = 280N$	0.25đ

1.5đ  
0.5đ



$$CP = BC \tan 60^\circ = 0.48 \tan 60^\circ = 0.8314m; BP = \sqrt{CP^2 + CB^2} = 0.96m$$

0.25đ

$$v_B = AB \cdot \omega_{AB} = 0.36 \cdot 10 = 3.6 \text{ m/s}$$

0.25đ

$$\omega_{BC} = \frac{v_B}{BP} = 3.75 \text{ rad/s}$$

0.25đ

$$v_C = CP \cdot \omega_{BC} = 3.1178 \text{ m/s}$$

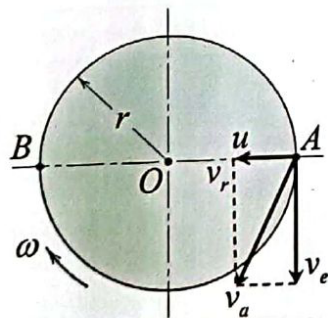
0.25đ

$$\omega_{CD} = \frac{v_C}{CD} = 12.9908 \text{ rad/s}$$

1.5đ

Câu 4

0.5đ



Hợp vận tốc:  $\vec{v}_a = \vec{v}_e + \vec{v}_r$

0.25đ

$$v_r = u = 7 \text{ m/s}$$

0.25đ

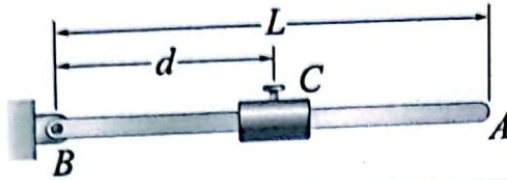
$$v_e = OA \cdot \omega = 20 \text{ m/s}$$

0.25đ

$$v_a = \sqrt{v_e^2 + v_r^2} = 21.1896 \text{ m/s}$$

0.25đ

5



1.5đ

$$T_1 = 0$$

$$T_2 = \frac{1}{2} J_R \omega^2 + \frac{1}{2} m_C v_C^2 = \frac{1}{2} \left( \frac{1}{3} m_R L^2 \right) \omega^2 + \frac{1}{2} m_C (d\omega)^2 = \frac{1}{6} m_R L^2 \omega^2 + \frac{1}{2} m_C d^2 \omega^2 = 2.46 \omega^2$$

0.5đ

$$\sum U_{1-2} = U_{\vec{w}_R} + U_{\vec{w}_C} = +W_R \cdot \frac{L}{2} + W_C \cdot d = +m_R g \cdot \frac{L}{2} + m_C g \cdot d = 64.746 J$$

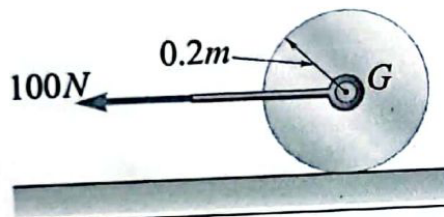
0.5đ

$$T_2 - T_1 = \sum U_{1-2} \Rightarrow \omega = 5.1303 \text{ rad/s}$$

0.5đ

1.5đ

Câu 6



0.5đ

$$T_1 = 0$$

$$T_2 = \frac{1}{2} m v_G^2 + \frac{1}{2} J_G \omega^2 = \frac{1}{2} m v_G^2 + \frac{1}{2} \left( \frac{1}{2} m \cdot r^2 \right) \left( \frac{v_G}{r} \right)^2 = \frac{3}{4} m v_G^2 = \frac{3 \cdot 200}{4 \cdot 9.81} v_G^2 = 15.2905 v_G^2$$

0.5đ

$$\sum U_{1-2} = U_{\vec{F}} = +F \cdot s_G = +100 N \cdot 1.5 m = 150 J$$

0.5đ

$$T_2 - T_1 = \sum U_{1-2} \Rightarrow v_G = 3.1321 \text{ m/s}$$