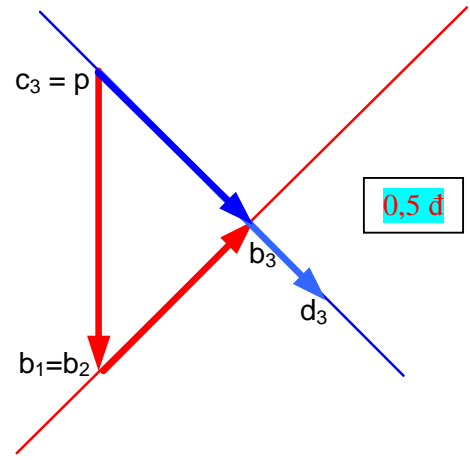
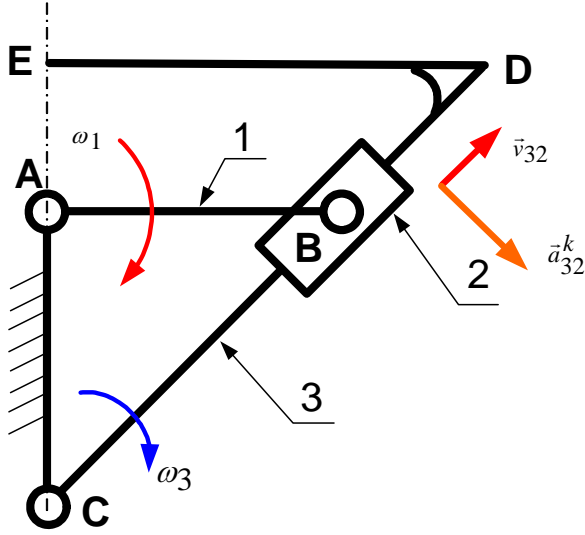


Bài 1:



$$\vec{v}_{B2} = \vec{v}_{B1} = \begin{cases} \perp AB \text{ (}\downarrow\text{)} \\ AB\omega_1 = a\omega \end{cases}; \quad \vec{v}_{B3} = \begin{cases} \perp CB \text{ (}\swarrow\text{)} \\ ? = CB\omega_3 = a\sqrt{2}\omega_3 \end{cases}$$

$$\vec{v}_{B3} = \vec{v}_{B2} + \vec{v}_{32}$$

$\perp CB \quad \downarrow \quad // CB$   
 $? \quad a\omega \quad ?$

0,5 đ

$$\vec{v}_{B3} = \begin{cases} \perp CB \text{ (}\swarrow\text{)} \\ v_{B2} = \frac{a\omega}{\sqrt{2}} \end{cases}; \quad \vec{v}_{32} = \begin{cases} // CB \text{ (}\nearrow\text{)} \\ v_{B2} = \frac{a\omega}{\sqrt{2}} \end{cases}; \quad \omega_3 = \begin{cases} \text{?} \\ \frac{v_{B3}}{CB} = \frac{\frac{a\omega}{\sqrt{2}}}{a\sqrt{2}} = \frac{\omega}{2} \end{cases}$$

$$\vec{v}_{D3} = \begin{cases} \perp CB \text{ (}\swarrow\text{)} \\ CD\omega_3 = 2a\frac{\omega}{2} = a\omega \end{cases}$$

0,5 đ

$$\vec{a}_{B2} = \vec{a}_{B1} = \begin{cases} \uparrow\uparrow BA \text{ (}\leftarrow\text{)} \\ AB\omega_1^2 = a\omega^2 \end{cases}; \quad \vec{a}_{32}^k = \begin{cases} \perp CB \text{ (}\swarrow\text{)} \\ 2v_{32}\omega_3 = 2\frac{a\omega}{\sqrt{2}}\frac{\omega}{2} = \frac{a\omega^2}{\sqrt{2}} \end{cases}$$

0,5 đ

$$\vec{a}_{B3} = \vec{a}_{B3}^n + \vec{a}_{B3}^\tau; \quad \vec{a}_{B3}^n = \begin{cases} \uparrow\uparrow CB \text{ (}\swarrow\text{)} \\ CB\omega_3^2 = \frac{a\omega^2\sqrt{2}}{4} \end{cases}; \quad \vec{a}_{B3}^\tau = \begin{cases} \perp CB \\ ? = CB\varepsilon_3 = a\sqrt{2}\varepsilon_3 \end{cases}$$

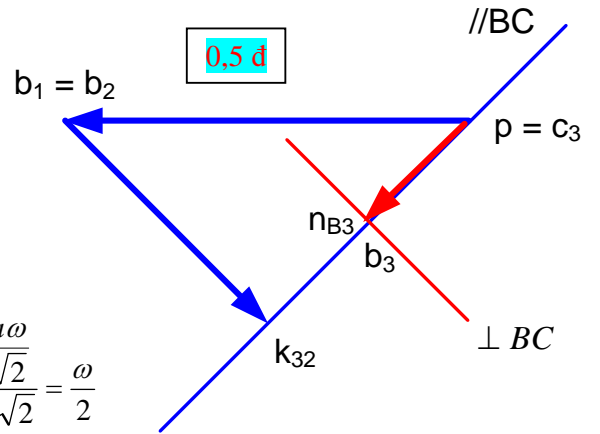
$$\vec{a}_{B3}^n + \vec{a}_{B3}^\tau = \vec{a}_{B3} = \vec{a}_{B2} + \vec{a}_{32}^k + \vec{a}_{32}^r$$

$\uparrow\uparrow CB \quad \perp CB \quad \leftarrow \quad \perp CB \quad // BC$   
 $\frac{a\omega^2\sqrt{2}}{4} \quad ? \quad a\omega^2 \quad \frac{a\omega^2}{\sqrt{2}} \quad ?$

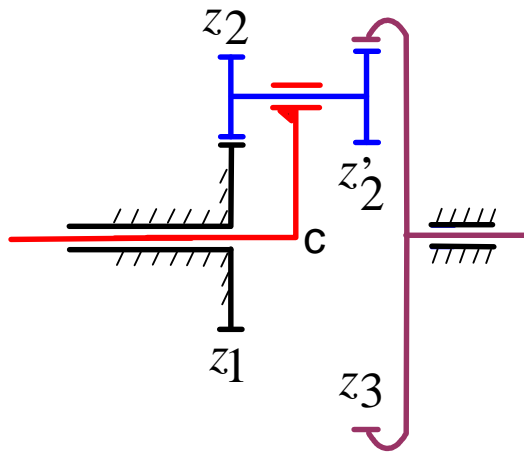
0,5 đ

$$\Rightarrow \vec{a}_{B3}^\tau = 0 \Rightarrow \varepsilon_3 = \frac{a_{B3}^\tau}{CB} = 0$$

0,5 đ



**Bài 2:**



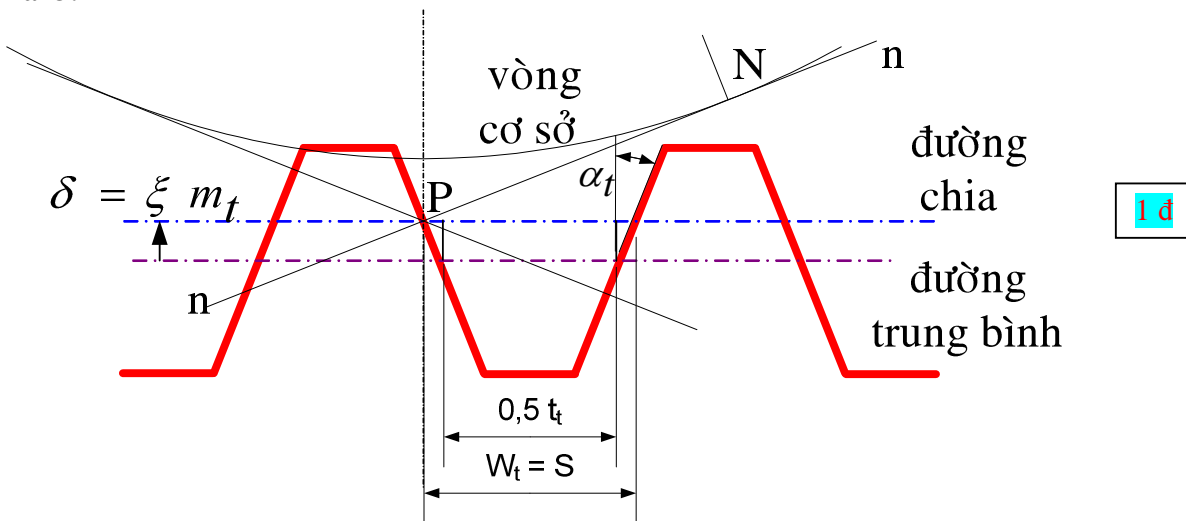
$$A_{12} = A_{2'3} \Rightarrow \frac{m}{2}(z_1 + z_2) = \frac{m}{2}(z_3 - z'_2) \Rightarrow z_3 = z_1 + z_2 + z'_2 = 60 + 20 + 25 = 105 \quad \boxed{\text{1 đ}}$$

$$i_{13}^c = \frac{\omega_1 - \omega_c}{\omega_3 - \omega_c} = (-1)^1 \frac{z_2 z_3}{z_1 z'_2} \Rightarrow \frac{0 - \omega_c}{\omega_3 - \omega_c} = (-1)^1 \frac{20 \cdot 105}{60 \cdot 25} = -\frac{7}{5} \Rightarrow i_{c3} = \frac{\omega_c}{\omega_3} = \frac{7}{12} \approx 0,583 \quad \boxed{\text{1 đ}}$$

$$i_{12}^c = \frac{\omega_1 - \omega_c}{\omega_2 - \omega_c} = -\frac{z_2}{z_1} \Rightarrow \frac{0 - \omega_c}{\omega_2 - \omega_c} = -\frac{20}{60} = -\frac{1}{3} \Rightarrow i_{2c} = \frac{\omega_2}{\omega_c} = 4 \quad \boxed{\text{1 đ}}$$

$$J_{td} = J_c \left( \frac{\omega_c}{\omega_3} \right)^2 = 0,05 \left( \frac{7}{12} \right)^2 = 0,017 \text{ kgm}^2 \quad \boxed{\text{1 đ}}$$

**Bài 3:**



Khi cắt bánh răng bằng dao phay lăn, thanh răng sinh ăn khớp khít với bánh răng phôi, do đó: bề dày răng trên vòng chia của bánh răng phôi (vòng lăn khi ăn khớp để cắt răng) sẽ bằng bề rộng rãnh răng trên vòng chia của thanh răng sinh:

$$S = W_t = \frac{1}{2} t_t + 2\delta \tan \alpha_t$$

$$t_t = m_t \pi; \quad \delta = \xi m_t \quad \boxed{\text{1 đ}}$$

$$S = W_t = m_t \left( \frac{\pi}{2} + 2\xi \tan \alpha_t \right)$$