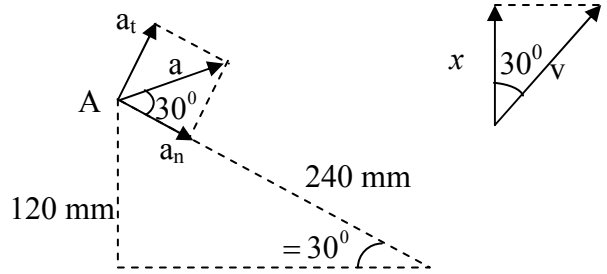
DİNAMİK DERSİ

UYGULAMA ÇÖZÜMLERİ – 3

Çözüm - 1:



$\dot{x} = 1{,}5$ m/sn **sabit olduğundan,** $\ddot{x} = 0$ **ve ivmenin dikey bileşeni yoktur.**

$$\cos 30^0 = \frac{\dot{x}}{v} \Rightarrow v = \frac{\dot{x}}{\cos 30^0} \Rightarrow v = 1{,}732 \text{ m/sn}$$

$$a_n = \frac{v^2}{r} \Rightarrow a_n = \frac{(1{,}732)^2}{0{,}24} \Rightarrow a_n = 12{,}5 \text{ m/sn}^2$$

$$\tan 30^0 = \frac{a_t}{a_n} \Rightarrow a_t = a_n . \tan 30^0 \Rightarrow a_t = 12{,}5 . \tan 30^0 \Rightarrow a_t = 7{,}217 \text{ m/sn}^2$$

$$a_t = r.\ddot{} \Rightarrow 7{,}217 = (0{,}24).\ddot{} \Rightarrow \ddot{} = 30 \text{ rad/sn}^2$$

Çözüm - 2:

$_{AB} = \pi/2$ radyan $\qquad a_t = r.\ddot{} \Rightarrow a_t = r.\alpha$

$$w_A = \frac{v_A}{r} = \frac{40}{300} \Rightarrow w_A = 0{,}133 \text{ rad/sn} \qquad w_B = \frac{v_B}{r} = \frac{48}{300} \Rightarrow w_B = 0{,}16 \text{ rad/sn}$$

$$\alpha = \frac{w_B^2 - w_A^2}{2.\ _{AB}} \Rightarrow \alpha = 2{,}52x10^{-3} \text{ rad/sn}^2 \qquad a_t = 300.(2{,}52x10^{-3}) \Rightarrow a_t = 0{,}76 \text{ m/sn}^2$$

$$a_n = \frac{v_B^2}{r} \Rightarrow a_n = 7{,}68 \text{ m/sn}^2 \quad a_{B,Toplam} = \sqrt{a_t^2 + a_n^2} \Rightarrow a_{B,Toplam} = 7{,}72 \text{ m/sn}^2$$

Çözüm - 3:

$$\dot{} = \frac{d}{dt} \Rightarrow \dot{} = b \qquad \dot{r} = \frac{dr}{dt} \Rightarrow \frac{d(a.\cos\ )}{d} . \frac{d}{dt} = \text{-ab.sin}$$

$$\ddot{} = \frac{d\dot{}}{dt} \Rightarrow \frac{db}{dt} = 0 \qquad \ddot{r} = \frac{d\dot{r}}{dt} \Rightarrow \frac{d(\text{-ab.sin}\ )}{d} . \frac{d}{dt} \Rightarrow \text{-ab}^2 . \cos$$

$$a_r = \ddot{r} - r.\dot{}^2 \Rightarrow a_r = -ab^2 \cos\ - a.\cos\theta . b^2 \Rightarrow a_r = -2ab^2 \cos$$

$$a\ = 2\dot{r}.\dot{} + r.\ddot{} \Rightarrow a\ = 2(-ab\sin\theta)b + 0 \Rightarrow a\ = -2ab^2 \sin$$

$$a = \sqrt{a_r^2 + a^2} \Rightarrow a = 2\sqrt{2}ab^2$$