Respostas Lista 1 - Dinmica II

1) mr^2

2) $\frac{mr^2}{2}$

3) (está faltando)

4) (está faltando)

5) a) v , b) $v/2r$, c)$v/2$ d) $E_1 = E_2 = 1/2mv^2 = 1/2(2m)v_2^2 + 1/2(2mr^2)w^2$

6) $\omega_2 = \frac{6\cos\beta v_1}{l+3l\cos\beta}$; $v_2 = \frac{6l\cos\beta v_1}{l+3l\cos\beta}$ - v_1

7) $\ddot{\theta} + \frac{3}{2}\frac{g}{l}\text{sen}\theta = 0$

8) $m\ddot{x} + kx = 0$

9) $m(\dot{y}\ x - \dot{x}\ y)$

10) $\dot{\beta} = -\ \frac{r\dot{\theta}\cos(\theta-\beta)}{r\cos(\theta+\beta)-l\cos\beta}$

11) $\frac{l}{2\sqrt{3}}$

12) $\alpha = \frac{M}{2mr}$; $F_t = mr_0\alpha$; $F_{c=mr_0\omega}$; $\omega(\ t) = \frac{Mt}{2mr}$

13) $v = \sqrt{\frac{(M+m)gh-2k(\Delta xh+h)}{\frac{(M+m)}{2}+\frac{mk^{*2}}{r}}}$

14) $kx + N = m\frac{l}{2}(\ \dot{\theta}^{\,2}\text{sen}\theta + \ddot{\theta}\cos\theta\ )$
P - mg + $V = m\frac{l}{2}$ (- $\ddot{\theta}$ senθ - $\dot{\theta}$ cosθ)
$\frac{l}{2}$ (-Ncosθ - P senθ + V senθ + kx cosθ) = $m\frac{1}{12}\ddot{\theta}$
x=$r\sqrt{2}$ - 2r sen θ
Sendo N e V as reações atuando na barra.

15) N_x - klsen $\theta = m\frac{l}{2}$ ($\dot{\theta}$ senθ + $\ddot{\theta}$ cosθ)
N_y - mg - kl(1-cos θ) = $m\frac{l}{2}$ (- $\ddot{\theta}$ cosθ + $\ddot{\theta}$ senθ)
$-\frac{l}{2}$ senθ mg +$kl^2\sin\theta = m\frac{1}{12}\ddot{\theta}$; Sendo N_x e N_y as reações na base.

16) F_x =$m($ a - $\frac{l}{2}$ $\ddot{\theta}$ cosθ - $\frac{l}{2}$ $\dot{\theta}$ senθ)
F_y-mg= m$\frac{l}{2}$($\ddot{\theta}$ sen θ - $\dot{\theta}$cosθ)
-$\frac{l}{2}$ senθ mg + kθ = m$\frac{1}{12}$ $\ddot{\theta}$ - $\dot{\theta}\frac{l}{2}$at senθ ; F_x e F_y são as reações na base.