PHYSQ 124, LEC A1: Particules et ondes
Aide-mémoire pour l'examen final du jeudi 15 décembre 2022

NOM: _____

Imprimez cette feuille. Vous pouvez y ajouter des formules, quelques mots ou schémas simples.
7 points sur 35 seront enlevés de votre note si :
1. vous ne retournez pas l'aide-mémoire avec l'examen, ou
2. vous y avez inclus des solutions.

$$\sum \mathbf{F} = m\mathbf{a} \qquad \mathbf{F}_{AB} = -\mathbf{F}_{BA} \qquad \mathbf{F}_{\mathrm{g}} = m\mathbf{g} \qquad g = 9.81 \text{ m/s}^2$$

$$f_k = \mu_k N \qquad f_s \leq f_{s,\max} = \mu_s N \qquad a_{\mathrm{cp}} = \frac{v^2}{r} = \omega^2 r \qquad F_{\mathrm{r}} = -kx$$

$$W = Fd\cos\theta \qquad K = \frac{1}{2}mv^2 \qquad \Delta K = K_f - K_i = W_{\mathrm{total}}$$

$$E = K + U \qquad \Delta E = E_f - E_i = W_{\mathrm{NC}} \qquad U_g = mgy \qquad U_r = \frac{1}{2}kx^2$$

$$\vec{I} = \vec{F}_{\mathrm{av}}\Delta t = \Delta\vec{p} \qquad \vec{p} = m\vec{v} \qquad \vec{P}_i = \vec{P}_f \qquad x_{\mathrm{cm}} = \frac{m_1 x_1 + \cdots + m_n x_n}{m_1 + \cdots + m_n}$$

$$s = \theta r \qquad v_t = \omega r \qquad a_t = \alpha r \qquad 1 \text{ tour} = 360° = 2\pi \text{ rad}$$

$$\theta = \theta_0 + \omega_0 t + \frac{1}{2}\alpha t^2 \qquad \omega = \omega_0 + \alpha t \qquad \omega^2 = \omega_0^2 + 2\alpha(\theta - \theta_0)$$

$$I = \sum m_i r_i^2 \qquad K_r = \frac{1}{2}I\omega^2 \qquad I_{\mathrm{poulie}} = \frac{1}{2}MR^2 \qquad K = \frac{1}{2}mv^2 + \frac{1}{2}I\omega^2$$

$$\tau = F_\perp r = Fr_\perp = rF\sin\theta \qquad \sum\tau = I\alpha \qquad \sum F_x = \sum F_y = \sum\tau = 0$$

$$L = I\omega = rp_\perp = r_\perp p = rp\sin\theta \qquad \sum L_i = \sum L_f$$

$$F = \frac{GMm}{r^2} \quad U_g = -\frac{GMm}{r} \quad G = 6.67\times10^{-11}\text{ N}\cdot\text{m}^2/\text{kg}^2 \quad R_E = 6370\text{ km} \quad M_E = 5.97\times10^{24}\text{ kg}$$

$$x = A\cos(\omega t) \qquad v = -\omega A\sin(\omega t) \qquad a = -\omega^2 A\cos(\omega t)$$

$$x_{max} = A \qquad v_{max} = \omega A \qquad a_{max} = \omega^2 A \qquad \omega = \sqrt{\frac{k}{m}} \qquad \omega = \sqrt{\frac{g}{L}}$$

$$v = \lambda f \qquad f = \frac{1}{T} \qquad \omega = 2\pi f = \frac{2\pi}{T} \qquad v = \sqrt{\frac{F}{\mu}} \qquad \mu = \frac{m}{L} \qquad I = \frac{P}{A} = \frac{P}{4\pi r^2}$$

$$f_n = nf_1 \qquad f_1 = \frac{v}{2L} \qquad f_1 = \frac{v}{4L} \qquad \lambda_n = \frac{\lambda_1}{n} \qquad \lambda_1 = 2L \qquad \lambda_1 = 4L$$

$$\Delta\ell = m\lambda \qquad \Delta\ell = \left(m + \frac{1}{2}\right)\lambda \qquad \tan\theta = \frac{y}{L} \qquad \Delta\ell = d\sin\theta$$