Ref: EWM

Physics 20 Placement Test Formula Sheet

Note: use 9.81 m/s^2 for the acceleration due to gravity and 6.67 x 10^{-11} N·m^2/kg^2 for the universal gravitation constant

$$v = \frac{d}{t} \qquad a = \frac{v_f - v_i}{t} \qquad v_{ave} = \frac{\Delta d}{\Delta t}$$

$$d = v_i t + \frac{1}{2}at^2 \qquad d = \left(\frac{v_i + v_f}{2}\right)t \qquad d = v_f t - \frac{1}{2}at^2$$

$$a_{ave} = \frac{\Delta v}{\Delta t} \qquad v_f{}^2 = v_i{}^2 + 2ad \qquad |v_c| = \frac{2\pi r}{T}$$

$$|a_c| = \frac{v^2}{r} = \frac{4\pi^2 r}{T^2} \qquad F_{net} = ma \qquad F_c = \frac{mv^2}{r}$$

$$g = \frac{F_g}{m} \qquad |F_g| = \frac{Gm_1m_2}{r^2} \qquad |g| = \frac{Gm}{r^2}$$

$$|F_f| = \mu|F_N| \qquad F_s = -kx$$

$$E_k = \frac{1}{2}mv^2 \qquad E_p = mgh \qquad E_p = \frac{1}{2}kx^2$$

$$W = |F||d|\cos\theta \qquad W = \Delta E$$

$$T = 2\pi\sqrt{\frac{l}{g}} \qquad T = 2\pi\sqrt{\frac{m}{k}} \qquad T = \frac{1}{f}$$

$$f_d = f_{source}\left(\frac{v_{sound}}{v_{sound} \mp v_{source}}\right) \qquad \frac{T_A^2}{r_A^3} = \frac{T_B^2}{r_B^3} \qquad \%efficiency = \frac{W_{out}}{W_{in}} \times 100\%$$