

Gobierno del Estado de Michoacán
 Colegio de Estudios Científicos y Tecnológicos del Estado de Michoacán
FORMULARIO PARA LA ASIGNATURA DE FISICA I Y II

➤ **DISTANCIA, DESPLAZAMIENTO, VELOCIDAD Y RAPIDEZ.**

$$\vec{v} = \frac{\vec{d}}{t}$$

$$\vec{v} = \frac{\vec{d}}{t}$$

➤ **MOVIMIENTO RECTILÍNEO UNIFORME**

$$V_m = \frac{V_o + V_f}{2}$$

$$V_m = \frac{d}{t} \therefore t = \frac{d}{V_m}$$

$$V_m = \frac{d}{t} \therefore d = V_m t$$

➤ **VELOCIDAD INSTANTÁNEA**

$$V_{(inst)} = \frac{d_2 - d_1}{t_2 - t_1}$$

➤ **(MRUA)**

$$a = \frac{v}{t}$$

$$a = \frac{V_f - V_o}{t}$$

$$d = V_o t + \frac{at^2}{2}$$

$$V_f = V_o + at$$

$$d = \frac{at^2}{2} \therefore t = \sqrt{\frac{2d}{a}}$$

$$V_f = V_o + at$$

$$d = V_o t + \frac{at^2}{2}$$

➤ **CAIDA LIBRE Y TIRO VERTICAL**

$$g = -9.8 \text{ m/s}^2$$

$$h = V_o t + \frac{gt^2}{2}$$

$$V_f = V_o + gt$$

$$h = \frac{gt^2}{2} \therefore t = \sqrt{\frac{2h}{g}}$$

$$V_f = gt$$

$$t_{(caer)} = \sqrt{\frac{2h}{g}}$$

$$V_s = gt$$

$$V^2 = 2gd$$

$$d = \frac{vt}{2}$$

$$v_m = \frac{v}{2}$$

$$h_{max} = \frac{v_o^2}{2g}$$

Formulas de Rozamiento

$$F_e = M_e N$$

$$F_d = M_d N$$

$$F_x = N + P_y = 0$$

$$M_e = F_e / N$$

➤ **TIRO PARABOLICO**

$$V_{0x} = V_o \cos \theta_o$$

$$V_{0y} = V_o \text{ sen } \theta_o$$

$$x = V_{0x} \cos \theta_o t$$

$$y = V_{0y} t - \frac{1}{2} g t^2$$

$$V_y = V_{0y} -$$

$$t_{subida} = \frac{V_{0y}}{g}$$

$$t_{aire} = \frac{2 V_{0y}}{g}$$

$$R = (V_o \cos \theta_o) t_{aire}$$

$$h_{max} = \frac{1}{2} \frac{v_{0y}^2}{g}$$

$$d_H = V_H t_{(aire)}$$

$$d_H = V_H t$$

$$V_i = V_o = \text{VELOCIDAD INICIAL}$$

➤ **MOVIMIENTO CIRCULAR**

$$1 \text{ rad} = 57.3^\circ$$

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$$w = \frac{\theta}{t}$$

$$F = \frac{1}{T} \quad w = \frac{2\pi}{T}$$

$$\omega = \omega_0 + \alpha \cdot t$$

$$\theta = \omega_0 t + \frac{1}{2} \alpha \cdot t^2$$

$$\omega^2 = \omega_0^2 + 2\alpha \cdot \theta$$

$$\theta = \left(\frac{\omega + \omega_0}{2} \right) t$$

$$\omega_m = \frac{\omega + \omega_0}{2}$$

➤ **MOVIMIENTO RECTILÍNEO CON ACCELERACIÓN CONSTANTE:**

$$v = v_0 + a \cdot t$$

$$d = v_0 \cdot t + \frac{1}{2} a \cdot t^2$$

$$v^2 = v_0^2 + 2a \cdot d$$

$$d = \left(\frac{v + v_0}{2} \right) t$$

$$v_m = \frac{v + v_0}{2}$$

➤ **EQUILIBRIO TRASLACIONAL Y FRICCIÓN Y LEYES DE NEWTON**

$$a = \frac{F}{m}$$

$$\frac{m_1}{m_2} = \frac{a_2}{a_1}$$

$$f_s = \mu_s \cdot n$$

$$f_k = \mu_k \cdot n$$

$$F_c = m \cdot a_c = \frac{m \cdot v^2}{r}$$

➤ **MAQUINAS SIMPLES**

$$e = \frac{P_0}{P_i}$$

$$M_A = \frac{F_0}{F_i}$$

$$M_1 = \frac{F_0}{F_i} = \frac{s_i}{s_0}$$

$$F_i \cdot r_i = F_0 \cdot r_0$$

$$F = \frac{R \cdot r}{d}$$

$$F \cdot d = R \cdot r + W \cdot v$$

$$F \cdot 2r = R \cdot r$$

$$F = \frac{R}{n}$$

$$F = \frac{R(r_1 - r_2)}{2r_1}$$

➤ **MOMENTO DE TORSIÓN Y EQUILIBRIO ROTACIONAL**

$$\tau = F \cdot r$$

➤ **TRABAJO Y ENERGÍA**

$$T = F \cdot d$$

$$T = F \cdot d \cdot \cos \theta$$

$$F = k(x - x_0)$$

$$P = \frac{T}{t}$$

$$E_p = m \cdot g \cdot h$$

$$E_c = \frac{1}{2} m \cdot v^2$$

$$E_m = E_c + E_p$$

$$E_c = K$$

➤ **LEY DE LA GRAVITACIÓN UNIVERSAL**

$$F = \frac{G \cdot m_1 \cdot m_2}{r^2}$$

$$G = 6.672 \times 10^{-11} \text{ N.m}^2/\text{kg}^2$$

$$g = 9.8 \text{ m/s}^2$$

$$\vec{g} = \frac{\vec{F}}{m_0}$$

$$F_c = m \cdot \omega^2 \cdot r$$

$$T^2 = k \cdot r^3$$

➤ **FLUIDOS EN REPOSO**

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$$\gamma = \frac{F}{L}$$

$$\rho = \frac{m}{V}$$

$$d = \frac{\rho_{sustancia}}{\rho_{agua}}$$

$$P_e = \frac{W}{V}$$

$$P = \frac{F}{A}$$

$$P = \rho \cdot g \cdot h$$

$$\frac{f}{a} = \frac{F}{A}$$

$$fl = FL$$

$$E = \rho \cdot V \cdot g$$

➤ **TEMPERATURA**

$$K = ^\circ C + 273.15$$

$$^\circ C = \frac{5}{9}(T_F - 32)$$

$$L = L_0(1 + \alpha \cdot \Delta T)$$

$$A = A_0(1 + 2 \cdot \alpha \cdot \Delta T)$$

$$V = V_0(1 + \beta \cdot \Delta T)$$

$$\beta = 3 \cdot \alpha$$

$$1 \text{ cal} = 4.186 \text{ J}$$

$$1 \text{ BTU} = 252 \text{ cal}$$

$$\text{Alcohol etílico } \beta = 1.12 \times 10^{-3} \text{ } ^\circ C^{-1}$$

$$\alpha_{cu} = 17 \times 10^{-6} \text{ } ^\circ C^{-1}$$

$$C = \frac{Q}{\Delta T}$$

$$c_e = \frac{Q}{m \cdot \Delta T}$$

$$L = \frac{Q}{m}$$

$$H = \frac{Q}{t}$$

$$R = \frac{L}{k}$$

$$P = e \cdot \sigma \cdot A \cdot T^4$$

➤ **TERMODINÁMICA**

$$T = P(V_f - V_i)$$

$$\Delta Q = \Delta U + T$$

$$\Delta S = \frac{\Delta Q}{T}$$

$$T = Q_e - Q_s$$

$$E = \frac{T}{Q_e}$$

➤ **ELECTROSTÁTICA**

$$q = n \cdot e$$

$$F = K \frac{q_1 q_2}{r^2}$$

$$K = 9 \times 10^9 \text{ N} \cdot \text{m}^2 / \text{C}^2$$

$$F = \frac{1}{4 \pi \epsilon_0} \frac{q_1 q_2}{r^2}$$

$$\epsilon_r = \frac{\epsilon}{\epsilon_0}$$

$$F_0 = \epsilon_r F$$

$$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$$

$$\begin{aligned} V &= I R \\ P &= I^2 R \\ P &= V I \end{aligned}$$

$$\vec{E} = \frac{\vec{F}}{q_0}$$

$$\vec{E} = \frac{kq}{r^2}$$

$$E = \frac{\sigma}{\epsilon_0}$$

$$1 \Omega = \frac{1V}{1A}$$

$$R = \frac{V}{A}$$

ECUACION DEL CALOR

$$Q = M C E \Delta T$$

GASES

$$\frac{V_1}{T_1} = \frac{V_2}{T_2}$$

MOVIMIENTO CIRCULAR

$$f = \frac{1}{T}$$

$$w = 2\pi f$$

$$V = wr$$

Hidrodinámica

$$G = AV$$