

BIANCO

(1)

$$1) C_1 = \frac{L^2/2 \epsilon_0}{h} = 8.85 \cdot 10^{-12} \text{ F}$$

$$\frac{1}{C_2} = \frac{h-d}{L^2/2 \epsilon_0} + \frac{d}{K \epsilon_0 L^2/2} = \frac{K(h-d) + d}{L^2/2 K \epsilon_0}$$

$$C_2 = \frac{K \epsilon_0 L^2/2}{K(h-d) + d} = 9.83 \cdot 10^{-12} \text{ F}$$

$$C_{eq} = C_1 + C_2$$

$$C_{eq} = 1.87 \cdot 10^{-11} \text{ F}$$

$$2) Q = C_2 V; D = \sigma_2 = \frac{Q}{L^2/2} = \frac{C_2 V}{L^2/2} = 5.9 \cdot 10^{-9} \text{ C/m}^2$$
$$= 1.18 \cdot 10^{-10} \text{ C}$$

$$3) q_p = Q \frac{K-1}{K} = C_2 V \frac{K-1}{K} = 4.7 \cdot 10^{-11} \text{ C}$$

$$4) u_e = \frac{1}{2} \epsilon E_K^2; D = \epsilon E_K \Rightarrow E_K = \frac{D}{K \epsilon_0}$$
$$= \frac{1}{2} \frac{K \epsilon_0 D^2}{(K \epsilon_0)^2} = \frac{1}{2} \frac{D^2}{K \epsilon_0} = 1.18 \cdot 10^{-6} \text{ J/m}^3$$

② ② BIANCO

$$R = \frac{1}{\sigma} \frac{l}{S} = 8.54 \cdot 10^{-2} \Omega$$

$$2) V = Ri = R \dot{\Sigma} = 17.07 \text{ V}$$

③

$$1) F = i_0 l B \Rightarrow i_0 = \frac{F}{l B} = 6 \text{ A}$$

$$2) |\mathcal{E}| = \frac{d\phi}{dt} = B l v_0; i_0 = \frac{\mathcal{E}}{R} = \frac{B l v_0}{R}$$

$$v_0 = \frac{i_0 R}{B l} = 300 \text{ m/s} = \frac{F R}{(l B)^2}$$

$$3) \mathcal{E} = -B l v; i = -\frac{B l v}{R}; F = i l B = -\frac{(B l)^2 v}{R}$$

$$m \frac{dv}{dt} = -\frac{(B l)^2 v}{R}$$

$$\int_{v_0}^{v_0/2} \frac{dv}{v} = \int_0^{T_{1/2}} -\frac{(B l)^2}{m R} dt; \ln \frac{v_0}{2 v_0} = -\frac{(B l)^2}{m R} T_{1/2}$$

$$T_{1/2} = \frac{m R \ln 2}{(B l)^2} = 10.4 \text{ s}$$

ROSA (1)

(VEDI BIANCO)

$$1) C_1 = 8.85 \cdot 10^{-12} \text{ F}$$

$$C_2 = 9.83 \cdot 10^{-12} \text{ F}$$

$$C_{eq} = 1.87 \cdot 10^{-11} \text{ F}$$

$$2) V = E_0(h-d) + \frac{E_0}{k}d ; E_0(h-d + \frac{d}{k}) = V$$

$$E_0 = \frac{V}{h-d + \frac{d}{k}} ; E_k = \frac{E_0}{k} = \frac{V}{k(h-d) + d} = 401.3 \text{ V/m}$$

$$3) \epsilon_p = \frac{k-1}{k} \epsilon_0 \Rightarrow q_p = \frac{k-1}{k} q = \frac{k-1}{k} C_2 V$$

$$= 4.7 \cdot 10^{-11} \text{ C}$$

$$4) \phi(D) \equiv q_2 = C_2 V = 1.18 \cdot 10^{-10} \text{ C}$$

$$2) V = Ri = R j \bar{\epsilon} \Rightarrow j = \frac{V}{R \bar{\epsilon}} = 5.83 \cdot 10^5 \text{ A/m}^2$$

$$R = \rho \frac{l}{\bar{\epsilon}} \Rightarrow \rho = \frac{R \bar{\epsilon}}{l} = 8 \cdot 10^{-7} \text{ } \Omega \text{ m}$$

③ ROSA

VEDI BIANCO

$$1) F = i_0 l B = 6,4 \text{ N}$$

$$2) | \mathcal{E} | = \frac{d\phi}{dt} = B l v_0 ; i_0 = \frac{\mathcal{E}}{R} = \frac{B l v_0}{R}$$

$$v_0 = \frac{i_0 R}{B l} = 320 \text{ m/s}$$

$$3) \tau_{1/4} = \frac{m R \ln 4}{(B l)^2} = 20,8 \text{ s}$$