Física 3 – Engenharia de Telecomunicações - Formulário 2

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$c=\frac{Q}{U}$ $E_{el}=\frac{Q^2}{2C}$ $E_{el}=\frac{C.U^2}{2}$ $\mu_E=\frac{\varepsilon E^2}{2}=\frac{E_{el}}{Volume}$ $Volume=Ab.h$ $A=\pi r^2$ $A=b.h$

$U=U_1+U_2+U_3$ $U=U_1=U_2=U_3$ $Q=Q_1+Q_2+Q_3$ $Q=Q_1=Q_2=Q_3$ $C_{eq}=C_1+C_2+C_3$ $\frac{1}{C_{eq}}=\frac{1}{C_1}+\frac{1}{C_2}+\frac{1}{C_3}$

$C_{eq}=\frac{C_1.C_2}{C_1+C_2}$ $C=\frac{R}{k}$ $E=\frac{k.Q}{r^2}$ $V=\frac{k.Q}{r}$ $C=\frac{\varepsilon.A}{d}$ $E=\frac{\sigma}{\epsilon_0}=4\pi k\sigma$ $V=V_0-4\pi k\sigma x$

$U=-4\pi k\sigma.\Delta x$ $c=\frac{a.b}{k(b-a)}$ $V=k.\left(\frac{Q_1}{R}+\frac{Q_2}{b}\right)$ $|U|=\frac{k.Q.(b-a)}{a.b}$ $c=\frac{L}{2k\ln\left(\frac{b}{a}\right)}$ $E=\frac{Q_1}{2\pi\varepsilon Lr}$

$V=\frac{\sigma_1}{\varepsilon}.a.\ln\left(\frac{r_{ref}}{r}\right)+\frac{\sigma_2}{\varepsilon}.b.\ln\left(\frac{r_{ref}}{b}\right)$ $|U|=\frac{2kQ}{L}.\ln\left(\frac{b}{a}\right)$ $\varepsilon_0=8,85.10^{-12}C^2/Nm^2$ $\chi_0=1$

$\epsilon=k.\varepsilon_0$ $k=\frac{1}{4\pi\varepsilon}$ $E_R=E_0-E_i$ $E_R=\frac{E_0}{k}$ $E_i=\left(1-\frac{1}{k}\right).E_0$ $\sigma_i=\left(1-\frac{1}{k}\right).\sigma_0$ $Q_i=\left(1-\frac{1}{k}\right).Q_1$

$U_R=\frac{U_0}{k}$ $C'=k.C_0$ $U_p=k.U_0$ $E_p=k.E_0$ $\sigma_p=k.\sigma_0$ $Q_p=k.Q_0$ $\Delta Q=(k-1).Q_0$

$Q_M=4\pi\varepsilon R^2E_M$ $Q_M=\varepsilon AE_M$ $i=\frac{Q}{\Delta t}=\frac{dQ}{dt}$ $Q=\int_{t_0}^{t}i(t)dt$ $Q=n.e$ $|e|=1,6.10^{-19}C$ $i=\int\vec{j}.d\vec{A}$

$j=\frac{i}{A}$ $R=\rho\frac{L}{A}$ $R_{eq}=R_1+R_2+R_3$ $\frac{1}{R_{eq}}=\frac{1}{R_1}+\frac{1}{R_2}+\frac{1}{R_3}$ $R_{eq}=\frac{R_1.R_2}{R_1+R_2}$ $Potência=\frac{E_n}{\Delta t}$ $V=\frac{\Delta x}{\Delta t}$

$Potência=i.U=R.i^2=\frac{U^2}{R}$ $V=V_0+at$ $\vec{F}=q.\vec{\nu}x\vec{B}$ $|\vec{F}|=q.\nu.B.sen(\theta)$ $x=x_0+v_0t+\frac{at^2}{2}$

$V^2=V_0^2+2a.\Delta x$ $\vec{A}x\vec{B}=det\begin{vmatrix}\vec{i} & \vec{j} & \vec{k}\\ A_x & A_y & A_z\\ B_x & B_y & B_z\end{vmatrix}$ $\sigma_{cp}=\frac{V^2}{R}$ $V=\frac{2\pi R}{T}$ $f=\frac{1}{T}$ $R=\frac{m.v}{q.B}$ $\nu=\frac{E}{B}$

$\vec{\nu}=\vec{\nu}_x+\vec{\nu}_y$ $V=\sqrt{V_x^2+V_y^2}$ $T=\frac{2\pi m}{q.B}$ $p=\frac{2\pi mV_x}{q.B}$ $\vec{F}=i.\vec{L}x\vec{B}$ $|\vec{F}|=i.L.B.sen(\theta)$ $d\vec{F}=id\vec{L}x\vec{B}$

$\vec{B}=\frac{\mu_0 . q . \vec{v} x \vec{r}}{4\pi r^2}$ $\tau=N . i . A . B . sen(\theta)$ $k_0=9.10^9 Nm^2/C^2$ $B=\frac{\mu_0 . q . v . sen(\theta)}{4\pi r^2}$ $B=\frac{\mu_0 . i . \alpha}{4\pi r}$

$\mu_0=4\pi . 10^{-7} Tm/A$ $d\vec{B}=\frac{\mu_0 . i . d\vec{L} x \hat{r}}{4\pi r^2}$ $dB=\frac{\mu_0 . i . dLsen(\theta)}{4\pi r^2}$ $F=\frac{\mu_0 . i_1 . i_2 . L}{2\pi d}$ $B=\frac{\mu_0 . i}{2\pi r}$

$B=\frac{\mu_0 . i}{4\pi R}\left[sen(\phi_2)-sen(\phi_1)\right]$ $B=\frac{N . \mu_0 . i}{2} . \frac{R^2}{\left(R^2+z^2\right)^{\frac{3}{2}}}$ $B=\frac{N . \mu_0 . i . A}{2\pi z^3}$ $B=\frac{\mu_0 . i . N}{L}$ $B=\frac{\mu_0 . i . N}{2\pi r}$

$B=\frac{\mu_0 . i . r}{2\pi R^2}$ $\oint_c \vec{B} . d\vec{L}=\mu_0 . i_{envolvido}$ $\vec{B} . d\vec{L}=B . dL . cos(\theta)$ $\vec{B} d\vec{L}=B_x dL_x+B_y dL_y+B_z dL_z$

$i_{envolvido}=\pm i_1 \pm i_2 \pm i_3 \pm ...$ $\mu=NiA$ $B=\frac{\mu_0 . \mu}{2\pi z^3}$ $\vec{\tau}=\vec{\mu} x \vec{B}$ $|\vec{\tau}|=\mu . B . sen(\theta)$ $\oint_S \vec{B} . d\vec{A}=0$

$E_n=-\mu B . cos(\theta)$ $W_{ext}=\Delta E_n=E_{nf}-E_{ni}$ $\phi_B=\int_S \vec{B} . d\vec{A}$ $\phi_B=B . A . cos(\theta)$ $\phi_B=\vec{B} . \vec{A}$ $\vec{\mu}_R=\sum_{i=1}^{n} \vec{\mu}_i$

$\vec{B} . d\vec{A}=B . dA . cos(\theta)$ $\vec{B} . d\vec{A}=B_x dA_x+B_y dA_y+B_z dA_z$ $\vec{M}=\frac{\vec{\mu}_{total}}{Volume}$ $\vec{M}=\frac{d\vec{\mu}}{dv}$ $M=\frac{1}{L}$ $\vec{B}_m=\mu_0 . \vec{M}$

$\vec{B}_R=\vec{B}_{ext}+\vec{B}_m$ $B_m=\chi_m . B_{ext}$ $M=\frac{\chi_m}{\mu_0} . B_{ext}$ $B_R=k_m . B_{ext}$ $k_m=1+\chi_m$ $M_{sat}=\frac{\rho . N_A . \mu}{M_{mol}}$ $\mu_m=k_m . \mu_0$

$B_S=\frac{\mu_0 . M_{sat}}{\chi_m}$ $N_A=6,02 x 10^{23}$ $k=1,38 x 10^{-23} j/k$ $\eta=\frac{m}{M_{mol}}=\frac{N}{N_A}$