**ОСНОВНИ ФОРМУЛИ**

| | | | |
|---|---|---|---|
| *милифарад* | $1\,mF = 10^{-3}\,F$ | *килонютон* | $1kN = 10^{3}\,kX$ |
| *микрофарад* | $1\,\mu F = 10^{-6}\,F$ | *меганютон* | $1\,MN = 10^{6}\,N$ |
| *нанофарад* | $1\,nF = 10^{-9}\,F$ | *гиганютон* | $1\,GN = 10^{9}\,N$ |
| *пикофарад* | $1\,pF = 10^{-12}\,F$ | *теранютон* | $1\,TN = 10^{12}\,N$ |
| *фемтофарад* | $1\,fF = 10^{-15}\,F$ | *петанютон* | $1\,PN = 10^{15}\,N$ |

$q = n\ e$ $\qquad \vec{F}_{12} = k\frac{q_1 q_2}{r_{12}^2}\vec{r}_{012}$ $\qquad \vec{E} = \frac{\vec{F}_0}{q_0}$ $\qquad \vec{F} = q\vec{E}$ $\qquad \vec{E} = k\frac{q}{r^2}\vec{r}_0$

$A = qU = q(\varphi_1 - \varphi_2)$ $\qquad \varphi = \frac{A}{q_0} = \frac{W}{q_0}$ $\qquad \varphi = k.\frac{q}{r}$

$C = \frac{q}{\varphi_1 - \varphi_2} = \frac{q}{U}$ $\qquad C_{усп.св.} = \sum_i C_i$ $\qquad \frac{1}{C_{посл.св.}} = \sum_i \frac{1}{C_i}$

$I = \frac{q}{t}$ $\qquad I = \frac{U}{R}$

$R = \rho\frac{L}{S}$ $\qquad R_{посл.св.} = R_1 + R_2 + R_3 + \ldots$ $\qquad \frac{1}{R_{усп.св.}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \ldots$

$P = \frac{A}{t}$ $\qquad Q = IUt$ $\qquad P = IU$

$B = \frac{F_{\max}}{q_0 \vartheta}$, $[B]$ – Тесла (Т)

$d\vec{F} = I\left(d\vec{l} \times \vec{B}\right),$ $\qquad F = I\,l\,B\sin\left(d\vec{l}, \vec{B}\right)$

$\Phi = \vec{B}.\vec{S} = B\,S\cos(\vec{B}, \vec{S})$, [Φ]-Вебер (Wb) $\qquad \mathcal{E}_i = -\frac{\Delta\Phi}{\Delta t}$ $\qquad I_i = \frac{\mathcal{E}_i}{R} = -\frac{1}{R}\frac{\Delta\Phi}{\Delta t}$

$\mathcal{E}_{Si} = -L\frac{\Delta I}{\Delta t}$, [L]-Хенри (Н)

$c_0 = \frac{1}{\sqrt{\varepsilon_0.\mu_0}} = 3.10^8\,m/s$ $\qquad E = E_0.\cos(\varphi)$

**ДОПЪЛНИТЕЛНИ ФОРМУЛИ**

$$k = \frac{1}{4\pi\varepsilon_0} = 9.10^9 \frac{N.m^2}{C^2}$$

$$\varepsilon_0 = 8{,}85.10^{-12} F/m$$

$$\mu_0 = 4\pi.10^{-7} H/m$$

$$\sin 180^\circ = 0; \sin 30^\circ = \frac{1}{2}; \sin 45^\circ = \frac{\sqrt{2}}{2}; \sin 90^\circ = 1$$

$$x(t) = v.t\,, \quad y(t) = \frac{at^2}{2} = \frac{qEt^2}{2m}, \quad y = \frac{qE}{2mv^2}.x^2$$

$$A = \int_{r_1}^{r_2} \vec{F}.d\vec{r} = \int_{r_1}^{r_2} \frac{Qq_0}{4\pi\varepsilon_0}\frac{dr}{r^2} = \frac{Qq_0}{4\pi\varepsilon_0}\left(\frac{1}{r_1} - \frac{1}{r_2}\right)$$

$$\vec{E} = -grad\varphi = -\frac{d\varphi}{dr} \qquad E = \frac{U}{d} \qquad W = \frac{q_1 q_2}{4\pi\varepsilon_0 r}$$

$$C_{сф.пров.} = \frac{q}{\varphi} = r/k \qquad C_{плосък конд.} = \varepsilon_0\varepsilon\frac{S}{d}$$

$$C_{сф.конд.} = 4\pi\varepsilon_0\varepsilon\frac{R_1R_2}{R_2 - R_1} \qquad C_{цилиндр.конд.} = \frac{2\pi\varepsilon_0\varepsilon\, l}{\ln\frac{R_2}{R_1}} \qquad W_{кондензатор} = \frac{1}{2}q.U$$

$$I = n_0.e.v.S \qquad I = GU \qquad \rho = \rho_0\left(1 + \alpha T\right)$$

$$\mathcal{E} = \frac{A_{стр.}}{q} \qquad A_{стр.} = \mathcal{E}\, I\, t$$

$$\vec{H} = \frac{\vec{B}}{\mu_0\mu} \qquad B = \frac{\mu_0 I}{2\pi R} \qquad B = \frac{\mu_0 I}{2}\frac{a^2}{\left(a^2 + z^2\right)^{3/2}}$$

$$B_\infty = \mu_0 nI \qquad F = \mu_0\frac{I_1 I_2}{2\pi d}L \qquad W_{вихр.ток} \sim \frac{\omega^2}{R}$$

$$\nu_0 = \frac{1}{2\pi\sqrt{LC}} \qquad Q = 2\pi\frac{E}{\Delta E} \qquad T = 1/\nu \qquad c = \nu.\lambda$$