Physics 202 Formula Sheet for Young&Geller Chapters 19, 20, 21 (Exam 2)

$$I=\frac{\Delta Q}{\Delta t} \qquad V=IR \qquad R=\frac{\rho L}{A} \qquad R=R_0[1+\alpha(T-T_0)]$$

$$P=V_{ab}I \qquad P=V_{ab}I=I^2R=\frac{V^2}{R}$$

series: $R_{eq}=R_1+R_2+R_3+...$ parallel: $\frac{1}{R_{eq}}=\frac{1}{R_1}+\frac{1}{R_2}+\frac{1}{R_3}+....$

junction rule: $\sum I=0$ loop rule: $\sum_{\text{around loop}} V=0$

$$i=I_0e^{-t/RC} \qquad q=Q_{\text{final}}(1-e^{-t/RC}) \qquad \tau=RC \qquad i=I_0e^{-t/RC} \qquad q=Q_0e^{-t/RC}$$

$$F=|q|vB\sin\phi \qquad a_{\text{rad}}=v^2/R \qquad F=IlB\sin\phi \qquad \tau=IAB\sin\phi \qquad \mu=IA$$

$$B=\frac{\mu_0 I}{2\pi r} \qquad \mu_0=4\pi\times10^{-7}\ \text{T}\cdot\text{m/A} \qquad \frac{F}{l}=\frac{\mu_0 II'}{2\pi r}$$

$$B=\frac{\mu_0 NI}{2R} \qquad B=\mu_0 nI \qquad B=\frac{\mu_0 NI}{2\pi r}$$

$$\Delta B=\frac{\mu_0}{4\pi}\frac{I\Delta l\sin\theta}{r^2} \qquad \sum B_{\parallel}\Delta s=\mu_0 I_{\text{encl}}$$

$$\Phi_B=B_{\perp}A=BA\cos\phi \qquad \mathcal{E}=\left|\frac{\Delta\Phi_B}{\Delta t}\right| \qquad \mathcal{E}=vBL$$

$$N_2|\Phi_{B2}|=M_{21}|i_1| \qquad M=M_{21}=M_{12}=\left|\frac{N_2\Phi_{B2}}{i_1}\right|=\left|\frac{N_1\Phi_{B1}}{i_2}\right| \qquad \mathcal{E}_2=M\left|\frac{\Delta i_1}{\Delta t}\right| \qquad \mathcal{E}_1=M\left|\frac{\Delta i_2}{\Delta t}\right|$$

$$N|\Phi_B|=L|i| \qquad \mathcal{E}=L\left|\frac{\Delta i}{\Delta t}\right| \qquad U=\tfrac{1}{2}LI^2 \qquad u=\frac{B^2}{2\mu_0} \qquad \frac{V_2}{V_1}=\frac{N_2}{N_1}$$

$$i=\frac{\mathcal{E}}{R}\left(1-e^{-(R/L)t}\right) \qquad \tau=L/R \qquad i=I_0e^{-(R/L)t} \qquad \omega=\frac{1}{\sqrt{LC}}$$