MİKRODALGA TEKNİĞİ I DERSİ FORMÜL KAĞIDI

Bu formül kağıdı temel formülleri içerir. Sınav sırasında tüm formülleri kullanmanız gerekmeyebilir.

$\gamma = \sqrt{(R + j\omega L)(G + j\omega C)}$	$SWR = \frac{V_{max}}{V_{min}} = \frac{1 + \lvert\Gamma\rvert}{1 - \lvert\Gamma\rvert}$	$X = \frac{1}{B} + \frac{X_L Z_0}{R_L} - \frac{Z_0}{B R_L}$
$Z_0 = \frac{V_0^+}{I_0^+} = -\frac{V_0^-}{I_0^-} = \sqrt{\frac{(R+j\omega L)}{(G+j\omega C)}}$	$Z_{in} = Z_0 \frac{Z_L + jZ_0 \tan\beta l}{Z_0 + jZ_L \tan\beta l}$	$X = \pm\sqrt{R_L(Z_0 - R_L)} - X_L$
$RL = -20\log(\lvert\Gamma\rvert)$	$Z_{in} = Z_0 \frac{Z_L + Z_0 \tanh\gamma l}{Z_0 + Z_L \tanh\gamma l}$	$B = \frac{X_L \pm \sqrt{R_L/Z_0}\sqrt{{R_L}^2 + {X_L}^2 - Z_0 R_L}}{{R_L}^2 + {X_L}^2}$
$\alpha = \frac{\sqrt{LC}}{2}\left(\frac{R}{L} + \frac{G}{C}\right) = \frac{1}{2}\left(\frac{R}{Z_0} + G Z_0\right)$	$\beta = \omega\sqrt{LC}$	$B = \pm\frac{\sqrt{(Z_0 - R_L)/R_L}}{Z_0}$
$P_{avg} = \frac{1}{2}\frac{\lvert V_0^+\rvert^2}{Z_0}(1 - \lvert\Gamma\rvert^2)$	$P_{loss} = \frac{1}{2}\frac{\lvert V_0^+\rvert^2}{Z_0}[(e^{2\alpha\ell} - 1) + \lvert\Gamma\rvert^2(1 - e^{-2\alpha\ell})]$	$P_L = \frac{1}{2}\frac{\lvert V_0^+\rvert^2}{Z_0}(1 - \lvert\Gamma\rvert^2)$
$P_{in} = \frac{1}{2}\frac{\lvert V_0^+\rvert^2}{Z_0}(1 - \lvert\Gamma(\ell)\rvert^2)e^{2\alpha\ell}$	$\mathrm{T} = 1 + \Gamma = \frac{2Z_1}{Z_1 + Z_0}$	$P = \frac{1}{2}\lvert V_g\rvert^2 \frac{Z_0}{(Z_0 + R_g)^2 + {X_g}^2}$
$P = \frac{1}{2}\lvert V_g\rvert^2 \frac{R_g}{4({R_g}^2 + {X_g}^2)}$	$P = \frac{1}{8}\lvert V_g\rvert^2 \frac{1}{R_g}$	$\frac{R}{L} = \frac{G}{C}$
$\beta = \sqrt{k^2 - k_c^2} = \sqrt{k^2 - \left(\frac{m\pi}{a}\right)^2 - \left(\frac{n\pi}{b}\right)^2}$		$k = \omega\sqrt{\mu\varepsilon} = \frac{2\pi}{\lambda}$
$V_{12} = \emptyset_1 - \emptyset_2 = \int_1^2 \vec{E}.d\vec{l}$	$Z_{TEM} = \frac{E_x}{H_y} = \frac{w\mu}{\beta} = \eta = \sqrt{\frac{\mu}{\varepsilon}}$	$Z_{TE} = -\frac{E_y}{H_x} = \frac{w\mu}{\beta} = \frac{k\eta}{\beta}$
$Z_{TM} = -\frac{E_y}{H_x} = \frac{\beta}{w\varepsilon} = \frac{\beta\eta}{k}$	$f_{c_{mn}} = \frac{1}{2\pi\sqrt{\mu\varepsilon}}\sqrt{\left(\frac{m\pi}{a}\right)^2 + \left(\frac{n\pi}{b}\right)^2}$	$I = \oint_C \vec{H} \cdot d\vec{l}$
$\lambda_g = \frac{2\pi}{\beta}$	$v_p = \frac{\omega}{\beta}$	$P_{10} = \frac{w\mu a^3 \lvert A_{10}\rvert^2}{4\pi^2} Re\{\beta\}$
$\alpha_d = \frac{k^2 \tan\delta}{2\beta}$	$\alpha_c = \frac{R_s}{a^3 b\beta k\eta}(2b\pi^2 + a^3 k^2)$	