TUT 02

9.) $E_o' = F^2 \cdot E$

$$F^2 = \frac{1}{2\sqrt{2\pi}} \left[\frac{1}{\cos}\left(\frac{1}{2}(\theta + \pi)\right) + \frac{1}{\sin}\left(\frac{1}{2}(\theta + \pi)\right) \right]$$

$$= \frac{1}{2\sqrt{2\pi}} \left[\sec\left(\frac{1}{2}(18^\circ + \pi)\right) + \operatorname{cse}\left(\frac{1}{2}(18^\circ + \pi)\right) \right]$$

$$= 1.467237446$$

$$E_o' = 1.467237446 \times (1)$$

17) 6 dB ... From Figure 4-43

18) 50 inches.

4.) $\sqrt{\sigma_{HH}} / \sqrt{\sigma_{VH}} = \frac{1}{0}$

$$\sqrt{\sigma_{VV}} / \sqrt{\sigma_{HH}} = \frac{1}{1} = 1$$

8.) $$N_i = \begin{cases} N_t PRI & PRI \leq \tau_o \\ N_t & PRI \geq \tau_o \end{cases}$$

FOR PRF = 1kHz $\Rightarrow$

$N_i = 30$

FOR PRF = 5KHz $\quad N_i = ?$

$$PRI = \frac{1}{5000\,Hz} = 0.2ms = 200\,\mu s$$

$$\therefore PRI = \tau_0 = 200\,\mu s$$

FOR PRF = 40 kHz

$$PRI = 28\,\mu s$$

$$\therefore PRI < \tau_0$$

$$N_i = \frac{N_t \cdot PRI}{\tau_0}$$

$$N_i = \frac{30 \times 25}{200} = 3.75$$

$$Z - 180 = 10 \log_{10} Z$$

$$Z = 10^{Z-180}$$

$$Z = 10^{14-180}$$

10) Given $\eta = -92$

$$Z = 14$$

$$\eta = \frac{\pi^2 K^2 (Z)}{\lambda^4}$$

$$\eta = \frac{\pi^2 \times (0.93)}{\left(\frac{299792458}{3 \times 10^9}\right)^4} \times \left(10^{14-180}\right) = \text{——}$$