Ch. 16 Prob 85

$\Delta V = 4.00\,mV$
$\Delta d = 0.300\,m$
$f = 1.00\,Hz$

a) What is the maximum electric field created?

$$E = \frac{\Delta V}{\Delta d} = \frac{4.00 \times 10^{-3} V}{0.300\,m} = \boxed{0.0133 \frac{V}{m}}$$

b) What is the maximum magnetic field strength in the E/M wave?

$$c = \frac{E}{B} \rightarrow B = \frac{E}{c} = \frac{0.0133 \frac{V}{m}}{3.0 \times 10^8 m/s}$$

$$\boxed{B = 4.44 \times 10^{-11} T}$$

c) find the wavelength of the wave

for waves we know $v = f \cdot \lambda$

$$\therefore \lambda = \frac{v}{f} = \frac{3.0 \times 10^8 m/s}{1.00\,Hz}$$

$$\boxed{\lambda = 3.0 \times 10^8\,m}$$