PHYSICS

1. (2)

Wavelength, $\lambda = \frac{c}{\nu}$

$= 2\pi\sqrt{LC} \times c$

$= 2 \times 3.14 \times 3 \times 10^{8} \sqrt{400 \times 10^{-12} \times 100 \times 10^{-6}}$

$= 377$ m

2. (4)

$B = \frac{E}{c} = \frac{10^{4}}{3 \times 10^{8}} = 3.33 \times 10^{-5}$ T

3. (1)

Conceptual

4. (3)

5. (1)

$\vec{S} = \frac{\vec{E} \times \vec{B}}{\mu_0}$

$\vec{S} \parallel (\vec{E} \times \vec{B})$

6. (2)

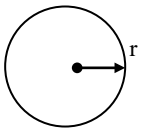
We know $I = \frac{P}{4\pi r^2}$ … (1)

$I = \frac{1}{2}\varepsilon_0 E_0^2 C$ … (2)

From equation (1) and (2), we get

$\frac{P}{4\pi r^2} = \frac{1}{2}\varepsilon_0 E_0^2 C$

$E_0 = \sqrt{\frac{P_0}{2\pi\varepsilon_0 C r^2}}$



7. (3)

Wavelength, $\lambda = \frac{c}{\nu}$

$= \frac{3 \times 10^{8}}{2 \times 10^{10}} = 1.5 \times 10^{-2}$ m

8. (2)

9. (3)

10. (2)

$\frac{E_{max}}{B_{max}} = v$ and $B = \mu_0 H$

$\Rightarrow H_{max} = \frac{E_{max}}{\mu_0 v}$

$= \frac{100}{(4\pi \times 10^{-7})\left(\frac{10^{8}}{2}\right)} = \frac{5}{\pi}$

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