Electromagnetic Waves

1. Maxwell in his famous equations of electromagnetism introduced the concept of
(a) ac current
(b) displacement current
(c) impedance
(d) reactance

▼ **Answer**

Answer: b

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2. The conduction current is same as displacement current when source is
(a) ac only
(b) dc only
(c) either ac or dc
(d) neither dc nor ac

▼ **Answer**

Answer: c

3. If a variable frequency ac source is connected to a capacitor then with decrease in frequency the displacement current will
(a) increase
(b) decrease
(c) remains constant
(d) first decrease then increase

▼ **Answer**

Answer: b

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4. An electromagnetic wave can be produced, when charge is
(a) moving with a constant velocity
(b) moving in a circular orbit
(c) falling in an electric field
(d) both (b) and (c)

▼ **Answer**

Answer: d

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5. Which of the following statement is false for the properties of electromagnetic waves?
(a) Both electric and magnetic field vectors attain the maxima and minima at the same place and same time.
(b) The energy in electromagnetic waves is divided equally between electric and magnetic field vectors.
(c) Both electric and magnetic field vectors are parallel to each other and perpendicular to the direction of propagation of wave.
(d) These waves do not require any material medium for propagation.

▼ **Answer**

Answer: c

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6. Which of the following has/have zero average value in a plane electromagnetic wave?
(a) Both magnetic and electric fields
(b) Electric field only
(c) Magnetic field only
(d) None of these

▼ **Answer**

Answer: a

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7. A charged particle oscillates about its mean equilibrium position with a frequency of 109 Hz. The frequency of electromagnetic waves produced by the oscillator is
(a) 10^6 Hz
(b) 10^7 Hz
(c) 10^8 Hz
(d) 10^9 Hz

▼ **Answer**

Answer: d

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8. If E and B denote electric and magnetic fields respectively, which of the following is dimensionless?

(a) $\sqrt{\mu_0\varepsilon_0}\ \frac{E}{B}$ (b) $\mu_0\varepsilon_0\ \frac{E}{B}$

(c) $\mu_0\varepsilon_0\left(\frac{B}{E}\right)^2$ (d) $\frac{E}{\varepsilon_0}\frac{\mu_0}{B}$

▼ **Answer**

Answer: a

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9. The ultra high frequency band of radio waves in electromagnetic wave is used as in
(a) television waves
(b) cellular phone communication
(c) commercial FM radio
(d) both (a) and (c)

▼ **Answer**

Answer: b

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10. The waves used by artificial satellites for communication is
(a) microwaves
(b) infrared waves
(c) radio waves
(d) X-rays

▼ **Answer**

Answer: a

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11. Which of the following electromagnetic waves is used in medicine to destroy cancer cells?
(a) IR-rays

(b) Visible rays
(c) Gamma rays
(d) Ultraviolet rays

▼ **Answer**

Answer: c
