

# 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



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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)  $\sqrt{\mu_0 \epsilon_0} \frac{E}{B}$
- (b)  $\mu_0 \epsilon_0 \frac{E}{B}$
- (c)  $\mu_0 \epsilon_0 \left( \frac{B}{E} \right)^2$
- (d)  $\frac{E}{\epsilon_0} \frac{\mu_0}{B}$

▼ **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

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