

BRIKS ACADEMY ELECTROMAGNETIC WAVES
CONT:9900084667

MULTIPLE CHOICE QUESTIONS

1. What is the phase difference between electric and magnetic fields in an electromagnetic wave?
a. 0 **b. π** c. $\pi/2$ d. $\pi/4$

2. Which of the following waves have a maximum frequency?
a. infrared waves **b. gamma rays** c. microwaves d. radio waves

- Explanation:** Gamma rays have a maximum frequency.
3. According to Maxwell's Hypothesis, a changing electric field gives rise to?
a. Induced EMF b. Electric Field **c. Magnetic Field** d. Magnetic Dipole

4. Which of the following proves that electromagnetic waves are transverse?
a. Reflection b. Diffraction c. Interference **d. Polarisation**

5. Which of the following is used to investigate the structure of solids?
a. Gamma Rays b. Infrared Rays c. X-Rays d. Cosmic Rays
6. Which of the following radiations are used to treat muscle ache?
a. Microwaves **b. Infrared Rays** c. Ultraviolet Rays d. X-Rays

7. When is the conduction current the same as the displacement current?
a. **When the source is ac**
b. When the source is dc
c. When the source is either an ac or a dc
d. When the source is neither dc nor ac

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

9. Which waves are used by artificial satellites for communication?
a. Infrared rays **b. Microwaves** c. Radio waves d. X-Rays

10. The ratio of contributions made by the magnetic field and electric field components to the intensity of an EM wave is
a. **1:1** b. c:1 c. $c^2:1$ d. $\sqrt{c}:1$

11. which of the following statement is correct,
(a) Outside the capacitor plates there exist only conduction current and no displacement current.
(b) Inside the capacitor, there is no conduction current and there is only displacement current.
(c) both (a) and (b) are correct.
(d) both (a) and (b) are wrong.

12. **Statement – 1:** In cases of steady electric fields in a conducting wire, the displacement current may be zero.
Statement – 2: The electric field E does not change with time in a conducting wire.
- (a) Statement – 1 is true and statement – 2 is true and statement -2 is correct explanation of statement – 1**
- (b) Statement – 1 is true and statement – 2 is true and statement -2 is not correct explanation of statement – 1
- (c) Statement – 1 is true and statement – 2 is wrong
- (d) Both Statement – 1 and statement – 2 is wrong.
13. Which of the following statement is NOT TRUE;
- (a) no material medium is involved in the vibrations of the electric and magnetic fields.
- (b) Electric and magnetic fields in an electromagnetic wave are perpendicular to each other, and to the direction of propagation
- (c) The velocity of electromagnetic waves in free space or vacuum is same of velocity of light in free space.
- (d) electromagnetic waves does not carry energy from one place to another**

2 MARKS QUESTIONS:

1. What is displacement current? Give its expression (explain the terms).
2. Write any two properties of EM waves.
3. Write any two uses of γ –rays or X- rays or IR rays or visible rays or UV-rays or micro-waves or radio waves.
4. What is conduction current and displacement current.
5. How the following rays are produced:
 (a) γ –rays (b) X- rays (c) IR rays (c) visible rays (d) UV-rays
 (e) micro-waves (f) radio waves.