Topic :-Electro Magnetic Wave

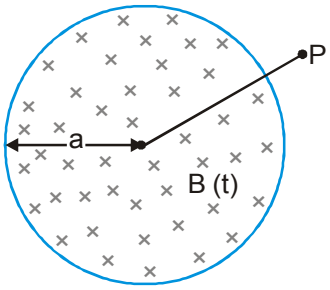
1. The electromagnetic waves used in the telecommunication are
(A) ultraviolet (B) infra-red (C) visible (D) microwaves.

2. A magnetic field can be produced by
(A) A charge at rest only (B) A moving charge only
(B) a changing electric field (D) both by (B) and (C)

3. Which of the following is independent of wavelength ?
(A) k (B) ω (C) ωk (D) k / ω

4 Finger prints on a piece of paper may be detected by sprinkling flourescent powder on the paper and then looking it into
(A) dark-light (B) sun-light (C) Infra-red-light (D) ultraviolet light

5. A uniform but time varying magnetic field B (t) exists in a circular region of radius a is directed into the plane of the paper as shown. The magnitude of the induced electric field at point P at a distance r from the centre of the circular region.



(A) is zero (B) decreases as 1/r
(C) increases as r (D) decreases as $1/r^2$

6. If and μ_0 represent the permittivity and permeability of vacuum and and μ represent the permittivity and permeability of medium, then refractive index of the medium is given by
[CBSE PMT 1997, 2000]

(A) $\sqrt{\frac{\mu_0 \in_0}{\mu \in}}$ (B) $\sqrt{\frac{\mu \in}{\mu_0 \in_0}}$ (C) $\sqrt{\frac{\in}{\mu_0 \in_0}}$ (D) $\sqrt{\frac{\in}{\mu_0 \in_0}}$

7. Infrared radiation is detected by
[AIEEE 2002]
(1) spectrometer (2) pyrometer (3) nanometer (4) photometer

8. Dimensions of , where symbols have their usual meanings, are
[AIEEE 2003]
(1) $[L^{-1} T]$ (2) $[L^{-2} T^2]$ (3) $[L^2 T^{-2}]$ (4) $[L T^{-1}]$

9. Which of the following radiations has the least wavelength ?
[AIEEE 2003]
(1) γ-rays (2) β-rays (3) α-rays (4) X-rays

10. An electromagnetic wave of frequency n = 3.0 MHz passes vacuum into a dielectric medium with permittivity ε = 4.0, then
[AIEEE 2004]
(1) wavelength is doubled and the frequency remains unchanged
(2) wavelength is doubled and frequency becomes half
(3) wavelength is halved and frequency remains unchanged
(4) wavelength and frequency both remain unchanged

11 An electromagnetic wave in vacuum has the electric and magnetic field and , which are always perpendicular to each other. The direction of polarization is given by and that of wave propagation by . Then
(1) and (2) and [AIEEE 2012]
(3) and (4) and

12. The magnetic field in a travelling electromagnetic wave has a peak value of 20 nT. The peak value of electric field strength is :
[JEE-MAIN 2013]
(1) 3V/m (2) 6V/m (3) 9V/m
(4) 12 V/m

13 Match List-I (Electromagnetic wave type) with List-II (Its association / application) and select the correct option from the choices given below the lists:
[JEE-Main 2014]

	List – I	List – II
(a)	Infrared waves	(i) To treat muscular strain
(b)	Radio waves	(ii) For broadcasting
(c)	X-rays	(iii) To detect fracture of bones
(d)	Ultraviolet rays	(iv) Absorbed by the ozone layer of the atmosphere

	(a)	(b)	(c)	(d)
(1)	(iii)	(ii)	(i)	(iv)
(2)	(i)	(ii)	(iii)	(iv)

(3) (iv) (iii) (ii) (i)
(4) (i) (ii) (iv) (iii)

14 During the propagation of electromagnetic waves in a medium: [JEE-Main 2014]

(1) Electric energy density is equal to the magnetic energy density.
(2) Both electric and magnetic energy densities are zero.
(3) Electric energy density is double of the magnetic energy density.
(4) Electric energy density is half of the magnetic energy density.

15 Arrange the following electromagnetic radiations per quantum in the order of increasing energy : [JEE-Main 2016] A : Blue light B : Yellow light C : X–ray D : Radiowave.
(1) A,B,D,C (2) C,A,B,D (3) B,A,D,C (4) D,B,A,C

16 The dimensions of $\varepsilon_0 E^2$ (ε_0 : permittivity of free space; E : electric field) is [IIT - JEE 2000]
(A) $M L T^{-1}$ (B) $M L^2 T^{-2}$ (C) $M L^{-1} T^{-2}$ (D) $M L^2 T^{-1}$