

# PYQSide

## NEET ELECTROMAGNETIC WAVES — SOURCES AND NATURE OF ELECTROMAGNETIC WAVES — PYQS

Max. Marks: 32

Questions: 8

### Section A (MCQ)

**Q.1** Match List-I with List-II : [NEET (UG) 2026]

| List-I<br>(Electromagnetic wave) |                | List-II<br>(Production) |                                                                                                 |
|----------------------------------|----------------|-------------------------|-------------------------------------------------------------------------------------------------|
| A.                               | Microwave      | I.                      | Electrons in atoms emit light when they move from a higher energy level to a lower energy level |
| B.                               | Visible light  | II.                     | Radioactive decay of nucleus                                                                    |
| C.                               | Gamma rays     | III.                    | Vibration of atoms and molecules                                                                |
| D.                               | Infra-red rays | IV.                     | Klystron valve or magnetron valve                                                               |

- (1) A-IV, B-III, C-II, D-I (2) A-III, B-IV, C-I, D-II  
(3) A-III, B-I, C-II, D-IV (4) A-IV, B-I, C-II, D-III

Scan or tap for the full solution 

**Q.2** The property which is not of an electromagnetic wave travelling in free space is that:

[NEET (UG) 2024]

- (1) They are transverse in nature  
(2) The energy density in electric field is equal to energy density in magnetic field  
(3) They travel with a speed equal to  $\frac{1}{\sqrt{\mu_0 \epsilon_0}}$   
(4) They originate from charges moving with uniform speed

Scan or tap for the full solution 

**Q.3** Out of the following options which one can be used to produce a propagating electromagnetic wave?

[NEET 2016 (Phase 1)]

- (1) A chargeless particle  
(2) An accelerating charge  
(3) A charge moving at constant velocity  
(4) A stationary charge

Scan or tap for the full solution 

**Q.4** The electric field associated with an em wave in vacuum is given by

$\vec{E} = \hat{i} 40 \cos(kz - 6 \times 10^8 t)$  where E, z and t are in volt/m, meter and seconds respectively. The value of wave vector k is [AIPMT 2012 (Prelims)]

- (1)  $2 \text{ m}^{-1}$  (2)  $0.5 \text{ m}^{-1}$  (3)  $6 \text{ m}^{-1}$  (4)  $3 \text{ m}^{-1}$

Scan or tap for the full solution 

**Q.5** The electric and the magnetic field, associated with an e.m. wave, propagating along the +z-axis, can be represented by [AIPMT 2011 (Prelims)]

- (1)  $\vec{E} = E_0 \hat{i}, \vec{B} = B_0 \hat{j}$  (2)  $\vec{E} = E_0 \hat{k}, \vec{B} = B_0 \hat{i}$   
(3)  $\vec{E} = E_0 \hat{j}, \vec{B} = B_0 \hat{i}$  (4)  $\vec{E} = E_0 \hat{j}, \vec{B} = B_0 \hat{k}$

Scan or tap for the full solution 

**Q.6** The electric field part of an electromagnetic wave in a medium is represented by  $E_x = 0$ ;

$$E_y = 2.5 \frac{\text{N}}{\text{C}} \cos \left[ \left( 2\pi \times 10^6 \frac{\text{rad}}{\text{s}} \right) t - \left( \pi \times 10^{-2} \frac{\text{rad}}{\text{m}} \right) x \right];$$

$E_z = 0$ . The wave is [AIPMT 2009]

- (1) moving along x direction with frequency  $10^6 \text{ Hz}$  and wavelength 100 m.  
(2) moving along x direction with frequency  $10^6 \text{ Hz}$  and wavelength 200 m.  
(3) moving along -x direction with frequency  $10^6 \text{ Hz}$  and wavelength 200 m.  
(4) moving along y direction with frequency  $2\pi \times 10^6 \text{ Hz}$  and wavelength 200 m.

Scan or tap for the full solution 

**Q.7** The electric and magnetic field of an electromagnetic wave are [AIPMT 2007]

- (1) in opposite phase and perpendicular to each other
- (2) in opposite phase and parallel to each other
- (3) in phase and perpendicular to each other
- (4) in phase and parallel to each other

Scan or tap for the  
full solution



**Q.8** Which of the following rays are not electromagnetic waves? [AIPMT 2003]

- (1) X-rays (2)  $\gamma$ -rays (3)  $\beta$ -rays (4) heat rays

Scan or tap for the  
full solution



### ANSWER KEY

| Ques. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |  |  |  |
|-------|---|---|---|---|---|---|---|---|--|--|--|
| Ans.  | 4 | 4 | 2 | 1 | 1 | 2 | 3 | 3 |  |  |  |