
	INDIAN SCHOOL AL WADI AL KABIR	
Class: X11	Department: SCIENCE 2022 - 23 SUBJECT : PHYSICS	DATE OF SUBMISSION 13.11.2022
Worksheet No:08 with answers	Topic: ELECTROMAGNETIC WAVES	Note: A4 FILE FORMAT
NAME OF THE STUDENT	CLASS / SECTION	ROLL NO.

OBJECTIVE TYPE QUESTIONS

1. What is wavelength of signal weather frequency of 300 megahertz?

- (a) 2m (b) 20m
(c) 10m (d) 1m.

Ans. D $[\lambda = \frac{c}{\nu} = \frac{3 \times 10^8}{3 \times 10^8} = 1m]$

Application

2. If $\lambda_x, \lambda_m, \lambda_v$ represents wavelength of X-Rays, microwaves & visible rays then

- (a) $\lambda_m > \lambda_x > \lambda_v$ (b) $\lambda_m > \lambda_v > \lambda_x$
(c) $\lambda_v > \lambda_x > \lambda_m$ (d) $\lambda_v > \lambda_m > \lambda_x$

Ans. B

Understanding

3. Human body radiate

- (a) microwave (b) X-rays
(c) infrared rays (d) gamma rays.

Ans. C

Remembering

4. EM waves can be produced by a charge:

- (a) An accelerated charged particles
(b) A charged particles moving with constant speed
(c) at rest.
(d) either at rest or moving with constant velocity.

Ans. (a)

Remembering

5. In EM spectrum minimum wavelength is of:

- (a) gamma rays (b) radio waves
(c) visible rays (d) microwave.

Ans. A

Understanding

6. Properties of EM radiation are identified by using there:

- (a) colour (b) their use
(c) speed (d) frequency or wavelength

Ans. D

Understanding

7. Light wave constitutes:

- (a) mechanical waves (b) magnetic waves
(c) electromagnetic waves (d) longitudinal waves

Ans. C

Understanding

8. Which of the following transport by EM waves:

- (a) charge & momentum (b) frequency & wavelength
(c) energy & momentum (d) wavelength & energy

Ans. C

Understanding

FILL IN THE BLANKS

1 . For an EM wave propagating along x –axis $E_{max} = 30V/m$, the maximum value of magnetic field is _____.

Ans. $10^{-7}T$

Application

2. Shorter the wavelength of an electromagnetic waves ,..... energy it carries

Ans. More [$E = \frac{hc}{\lambda}$]

Understanding

3. Waves used to transmit cellular telephone message are.....

Ans. microwaves

Analysing & Evaluating

4. In EM waves transport both.....and..... takes place.

Ans. Energy, momentum $[E = h\nu \& p = \frac{h}{\lambda}]$

Understanding

5. EM waves are produced by..... charges.

Ans. Accelerated/Oscillated

Understanding

6. To study structure of crystals..... are used.

Ans. X-rays

Application

7. Human eye can detect..... part of electromagnetic spectrum.

Ans. visible

Remembering

8. To treat cancer and tumor in radiography..... rays are used.

Ans. γ -rays

Remembering

QUESTIONS BASED ON BOARD PAPERS

FILL IN THE BLANKS

[1] During the propagation of an EM wave in a medium electrical energy density is -----
magnetic energy density

Equal

Understanding

[2] The velocity of em waves in the free space can be given by relation -----

$$c = \frac{1}{\sqrt{\mu_0 \epsilon_0}}$$

Remembering

[3] The cross product $\vec{E} \times \vec{B}$, always gives the ----- of em waves

Direction

Understanding

[4] The em waves of frequency range from 5×10^5 Hz to 10^9 Hz are called ----

Remembering

Radio wave

[5] The em waves of frequency range from 3×10^{18} Hz to 10^{22} Hz are called ----

Gamma rays

Remembering

[6] The em waves which are used in the working of solar water heater and cookers are called ----

Infra red

Remembering

[7] In a plane em wave, the electric field oscillates at a frequency of 2.5×10^{10} Hz and amplitude of 480V/m. The amplitude of oscillating magnetic field is ----

1.6×10^{-6} wb/m²

Application

[8] Maxwell's equations related to study of em waves describe the fundamental laws of ---- & ----

Electricity & magnetism

Understanding

OBJECTIVE TYPE QUESTIONS

[1] Microwaves are the emwaves with frequency, in the range of

[a] micro hertz [b] mega hertz [c] giga hertz [d] hertz

[c]

Remembering

[2] Which of the following em waves has smaller wavelength

[a] X – rays [b] radio waves [c] gamma rays [d] microwaves

C

Remembering

[3] The waves used in telecommunication are

[a] infra red [b] u.v [c] microwaves [d] cosmic rays

[c]

Prepared by Mr. William D	Checked by HOD SCIENCE
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