

ELECTROMAGNETIC WAVES

1. How are the following e.m. radiations produced, mention one used of them.?

(1) Microwaves (2) Ultra – violet rays (3) gamma rays 3scores

2. a) Electromagnetic waves with wavelengths i) are used kill in water purifiers. ii) are used in aircraft navigation. Identify the waves. (2)

3. Name the constituent radiation of electromagnetic spectrum which

a) is used in satellite Communication.

b) is used for studying crystal structure.

c) is similar to the radiation emitted during decay of radio active nuclei.

d) is absorbed from sunlight by ozone layer (1/2x4=2)

4. Match the Following.

ABC

Radio wave	High energy electrons	destroy cancer cells
Infra red waves	Radioactive nuclei	Radar systems
X-rays	accelerated motion of charges in conducting wires	Greenhouse effect
γ - ray	Hot bodies and molecules	cellular phones
	Special vacuum tubes	diagnostic purpose

(1/2 × 4)

5 a) In electromagnetic wave the phase difference between electric and magnetic field vectors is----- (1mark)

b). Waves used for telecommunication are _____ (1mark)

c). For which of visible light refractive index maximum and minimum? (1mark)

6. The electric field part of an electromagnetic wave in vacuum is

$$E = 12N/C \cos((2\text{rad/m})y + (5 \times 10^6 \text{ rad/s}) t) i$$

(a) What is the direction of propagation of electromagnetic wave? (1)

(b) What is the wavelength λ ? (1)

(c) What is amplitude of magnetic field part of wave? (1)

(d) Write an expression for magnetic field part wave? (1)

Total score: 4

7. Electromagnetic radiation with wavelength

(i) Are used to kill germs in water.

(ii) Are used in TV communication.

(iii) Play an important role in maintaining the earth's surface warmth.

(a). Name the part of electromagnetic spectrum to which these belong. Score:1

(b). Arrange these in increasing order of wavelength. Score:1

8. Arrange the following electromagnetic waves in the increasing order of wave length

U V, Radio waves, Gamma rays, Microwaves, IR, X rays

9. How are the following e.m. radiations produced, mention one used of them.?

(1) Microwaves (2) Ultra – violet rays (3) gamma rays 3scores

10. Name the constituent radiation of electromagnetic spectrum which (2)

(a) is used in satellite communication. (b) is used for studying crystal structure. (c) is similar to the radiation emitted during decay of radioactive nuclei (d) is absorbed from sunlight by ozone layer.

11. (a) Name any 4 electromagnetic waves in the increasing order of their frequencies

(b) what is the ratio of speed of gamma rays and radio waves in vacuum? (1)

12. Match the following.

Gama rays	Heat waves
Micro waves	Excitation of atoms
Ultra violet	Radioactive decay in nucleus
Infrared radiations	magnetron valve

2Score