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SUB:-PHYSICS CLASS XII 2022-23
REVISION PAPER UNIT- VIII-ELECTRO-MAGNETIC WAVES

Note: Q. No. 1-4 is of 01 mark each, Q. 5-6 is of 02 marks each, Q.No.7 is of 03 marks, Q. No. 8 is a case study based and is of 04 marks, Q. No. 11 is of 5 marks.

S N	Question	Ma rks
1	Out of the following options which one can be used to produce a propagating electromagnetic wave? (a) A chargeless particles (b) An accelerating charge (c) A charge moving at constant velocity (d) A stationary charge	1
2	Assertion (A): Like light radiations, thermal radiations are also an electromagnetic-radiations. Reason (R): The thermal radiations require no medium for propagation. a- Both assertion and reason are correct and the reason is the correct explanation of assertion. b- Both assertion and reason are correct and reason is not a correct explanation of assertion. c- Assertion is correct but the reason is incorrect d- Assertion is incorrect but the reason is correct.	1
3	The speed of electromagnetic wave in vacuum depends upon the source of radiation (a) increases as we move from γ -rays to radio waves (b) decreases as we move from γ -rays to radio waves (c) is same for all of them (d) None of the above	1
4	An electromagnetic wave going through vacuum is described by $E = E_0 \sin(kx - \omega t)$ and $B = B_0 \sin(kx - \omega t)$ Which of the following equations is true? (a) $E_0 k = B_0 \omega$ (b) $B_0 k = E_0 \omega$ (c) $E_0 B_0 = \omega k$ (d) None of these	1
5	When a plane electromagnetic wave travels in vacuum along y-direction. Write the (i) ratio of the magnitudes and (ii) the direction of its electric and magnetic field vectors.	2
6	Depict the fields diagram of an electromagnetic wave propagating along positive X-axis with its electric field along Y-axis.	2
7	Find the wavelength of electromagnetic wave of frequency 5×10^{10} Hz in free space. Give its two applications.	3
	Case study-based questions (questions no 8- 11) X-RAY X-ray is a type of radiation known as electromagnetic waves. It helps in creating pictures of the inside of human body. These images show the different parts of the body in various shades of black and white. It is due to the difference in amount of absorption by various tissues in the body. As calcium in bones absorbs most of the X-rays, so bones look white in colour. Fat and other soft tissues absorb less and depicts grey colour. 8. To which part of the electromagnetic spectrum does a wave of frequency 2×10^{18} Hz belong? 1 9. What is the range of wavelength for X-rays? 1 10. How are the X-rays produced? 2 OR 10. Mention any two use of X-rays. 2	4
11	Name the parts of the electromagnetic spectrum which is (i) suitable for RADAR systems in aircraft navigations. 1 (ii) used to treat muscular strain. 1 (iii) used as a diagnostic tool in medicine. 1 Write in brief, how these waves can be produced? 2	5