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Exam Type: Unit Test
Paper Type: chapterwise
Duration: 60 mins
Total Marks: 100
Total Questions: 9

Instructions:
2bwengrmblf, s,mdbwjelkn;amdc

Subject: Physics
Chapter: Electromagnetic wave
School: atul public school

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Chapter: Electromagnetic Waves

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SECTION A (Easy) [30 Marks]

1. (2 marks) Define electromagnetic waves. What is the nature of these waves?
2. (3 marks) List any three properties of electromagnetic waves.
3. (5 marks) Arrange the following electromagnetic radiations in the ascending order of their frequencies: X-rays, microwaves, ultraviolet rays, radio waves, infrared rays.
4. (20 marks) In the electromagnetic spectrum, name the radiations used for:
   * (4 marks) (i) aircraft navigation,
   * (4 marks) (ii) killing germs,
   * (4 marks) (iii) cooking food
   * (4 marks) (iv) detecting fracture in bones
   * (4 marks) (4) remote controls of TV.

SECTION B (Medium) [40 Marks]

5. (10 marks) What is displacement current? How is it different from conduction current? Explain briefly.
6. (10 marks) Write down Maxwell's equations. Explain the physical significance of each equation.
7. (20 marks) The amplitude of the magnetic field part of a harmonic electromagnetic wave in

vacuum is B0 = 510 nT. What is the amplitude of the electric field part of the wave? If a proton is placed in the path of these waves, what force would it experience?

SECTION C (Hard) [30 Marks]

8. (15 marks) Show that the average energy density of the electric field equals the average energy density of the magnetic field in an electromagnetic wave.
9. (15 marks) Discuss the production and detection of radio waves.