

**O Level Pure Physics MCQs**

**Electromagnetic Waves Test 1.0**

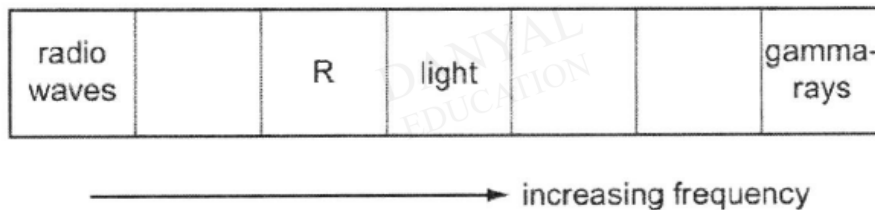
Q1

Which line in the table summaries the change in wave characteristics on going from infra-red to ultraviolet in the electromagnetic spectrum?

	frequency	speed in a vacuum
A	decreases	decreases
B	decreases	remains constant
C	increases	remains constant
D	increases	increases

Q2

The diagram shows the main sections of the electromagnetic spectrum in order of increasing frequency. Some of the sections are labelled.



The section R has a frequency just below that of light.  
Which application uses the section R?

- A Sterilisation
- B Satellite television
- C Sunbed
- D Television remote controller

Q3

The speed of the radio waves in air is  $3.0 \times 10^8$  m/s and the wavelength is about 5.0 m. What is the frequency of the waves broadcast by the radio station?

- A 60 MHz
- B 60 GHz
- C 150 MHz
- D 150 kHz

Q4

Which of the following statement(s) about electromagnetic waves is/are *correct*?

- I All electromagnetic waves travel at  $3.0 \times 10^8$  m/s in vacuum.
- II All electromagnetic waves travel faster in air than in water.
- III All electromagnetic waves have magnetic field around them.

- A II only
- B I and II only
- C II and III only
- D I, II and III

Q5

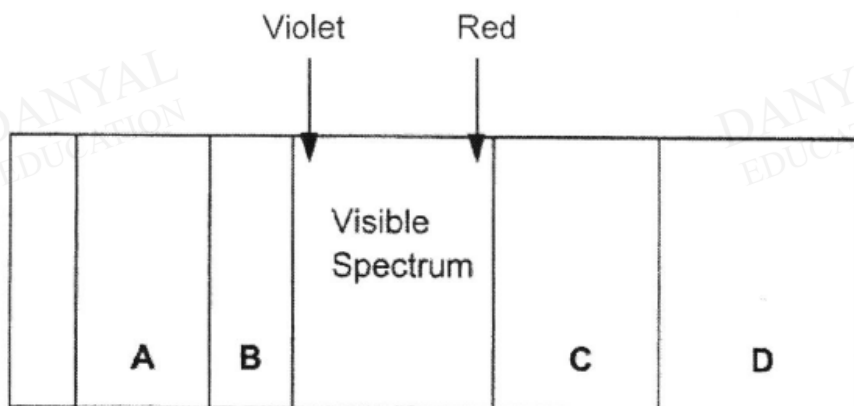
Which of the following statements about electromagnetic waves is/are correct?

- I The speed of electromagnetic waves is equal to the speed of light in a vacuum.
- II Electromagnetic waves are longitudinal waves.
- III Electromagnetic waves can travel through vacuum

- A I only
- B II only
- C I and II only
- D I and III only

Q6

The diagram shows the electromagnetic spectrum with the ends of the visible spectrum marked. Which section of the electromagnetic spectrum has waves which have the shortest wavelength?



Q7

Which of the following is arranged in order of decreasing wavelength?

- A microwaves, X-rays, visible light
- B radio waves, ultraviolet rays, infra-red radiation
- C radio waves, visible light, gamma rays
- D ultraviolet rays, visible light, infra-red radiation

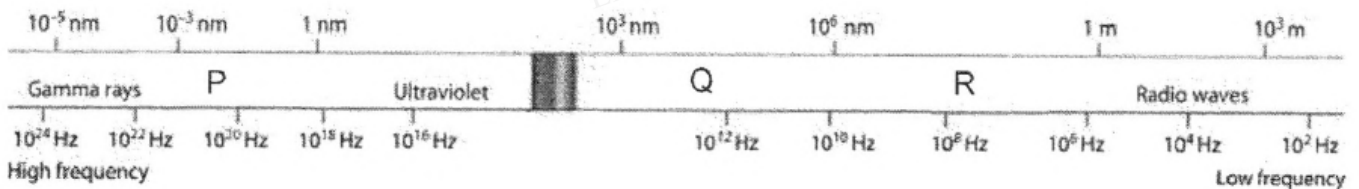
Q8

Which electromagnetic wave can cause structural damage to living cells and tissue?

- A infra-red radiation
- B microwaves
- C radiowaves
- D ultra-violet radiation

Q9

The following EM spectrum shows waves and their various frequencies.



Which of the following shows the EM waves at the correct position of the spectrum?

	P	Q	R
A	infra-red	X-ray	microwave
B	X-ray	infra-red	microwave
C	microwave	X-ray	infra-red
D	microwave	infra-red	X-ray

Q10

Different types of electromagnetic radiation have different uses.  
Which common use of electromagnetic radiation listed below are **incorrect**?

- (I) X-rays are used for pre-natal scanning of the foetus
- (II) infra-red radiation are used in sunbeds
- (III) microwaves are used in wireless telecommunication

- A (I) and (II) only
- B (II) and (III) only
- C (I) and (III) only
- D (I), (II) and (III)

**Answers**

**Electromagnetic Waves Test 1.0**

Q1 C

Q2 D

Q3 A

Q4 D

Q5 D

Q6 A

Q7 C

Q8 D

Q9 B

Q10 A

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