



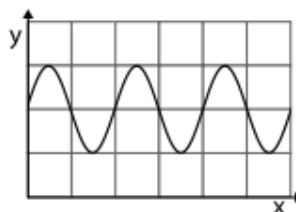
Electromagnetism

2016

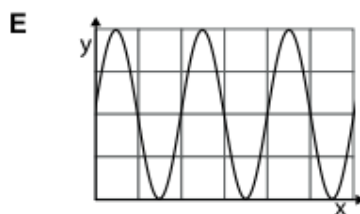
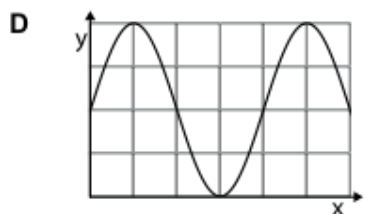
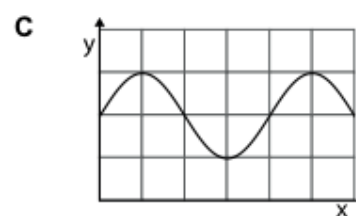
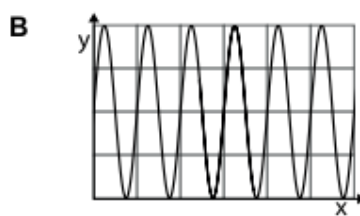
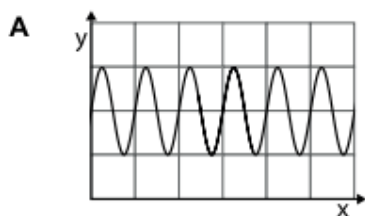
- 11 An AC voltage is induced in a coil of wire when it is rotated in a magnetic field.

This voltage can be displayed on the screen of an instrument called an oscilloscope, which shows the variation of the induced voltage on the y-axis plotted against time on the x-axis.

The oscilloscope trace below is the result of rotating a coil at a constant speed in a uniform magnetic field.



Which one of the following traces would result from rotating the coil at a faster constant speed, whilst keeping all other conditions unchanged? (The scales on the axes do not change.)





Electromagnetism

2017

- 3 Below are four statements about electromagnetic waves.
- 1 Microwaves have a smaller wavelength than visible light.
 - 2 The speed of visible light in a vacuum is higher than the speed of other types of electromagnetic wave.
 - 3 Gamma rays have the largest wavelength of any electromagnetic wave.
 - 4 Radio waves are used in hospital radiography to look for broken bones.

Which of the statements are correct?

- A none of them
- B 1 and 2 only
- C 1 and 3 only
- D 1 and 4 only
- E 2 and 3 only
- F 2 and 4 only
- G 3 and 4 only
- H 1, 2, 3 and 4



Electromagnetism

2018

3 Here are four statements about light:

- 1 In a vacuum, green light travels faster than blue light.
- 2 In a vacuum, the wavelength of red light is greater than the wavelength of green light.
- 3 In water, red light travels faster than it travels in a vacuum.
- 4 In water, the frequency of blue light is greater than the frequency of red light.

Which pair of statements is correct?

- A 1 and 2
- B 1 and 3
- C 1 and 4
- D 2 and 3
- E 2 and 4
- F 3 and 4



Electromagnetism

2019

- 19** Cosmologists have deduced that soon after the Universe was formed it was filled with electromagnetic radiation in the form of intense gamma-rays. They have also deduced that the Universe has been expanding since that time. One effect of this expansion is that the electromagnetic radiation that fills the Universe is now in the microwave region of the spectrum.

Here are three statements about the effects of the Universe expanding on the electromagnetic radiation that filled the early Universe:

- 1 The expansion has caused an increase in the frequency of the radiation.
- 2 The expansion has caused a decrease in the wavelength of the radiation.
- 3 The expansion has caused frequency to change in direct proportion to wavelength.

Which of the statements is/are correct?

- A none of them
- B 1 only
- C 2 only
- D 3 only
- E 1 and 2 only
- F 1 and 3 only
- G 2 and 3 only
- H 1, 2 and 3