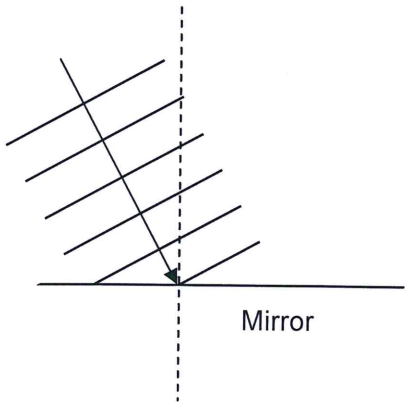
Exam Questions
Chapter 7.1 - Light as a Wave
Question 1 2010:1:1

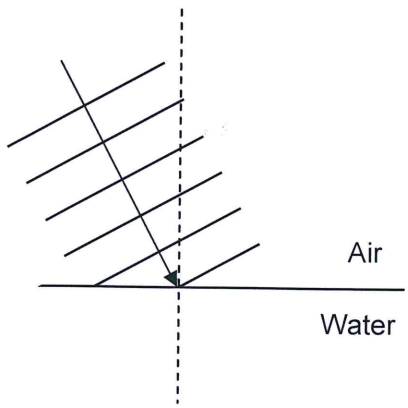
(4 marks)

The diagrams below show wavefronts of light incident on two different surfaces. In diagram (a) the wavefronts are incident on a mirror. In diagram (b) the wavefronts are incident on an air-water interface. In both diagrams a dotted line at 90° to the surface has been drawn. Complete the diagrams showing how the wavefronts behave as they interact with the surface. In both cases you should draw four wavefronts. The direction of travel of the wavefronts is included.

(a)



(b)



Question 2 2010:1:6

(4 marks)

Until about 50 years ago, astronomers used visible light to observe the Universe. They now use a variety of types of electromagnetic radiation to make their observations. With reference to the properties of electromagnetic radiation, explain the potential advantages to an astronomer of studying the Universe using:

(a) radio waves

(b) X-rays

Question 3 2014:1:1

(2 marks)

Astronomers study stars using a variety of electromagnetic frequencies. Place the following sections of the electromagnetic spectrum in order from longest wavelength to smallest: visible, infra red, X-ray and radio.

Question 4 2014:1:2

(4 marks)

Electromagnetic radiation (emr) is said to have both wave and particle properties. State and describe an example of each of these properties of emr.