WAVES questions

***The compendium might help you find these answers.***

1. State what all waves transmit.
2. State the type of wave shown in the diagram below.



8 m

3 m

1. The questions below refer to this diagram.

(a) Calculate the wavelength of the waves shown.

(b) Determine the amplitude of these waves.

1. Water waves are represented in these diagrams. Calculate the wavelength and amplitude of each wave.

**(a)**

12 m

2 m

**(d)**

30 m

5.5 m

**(b)**

20 m

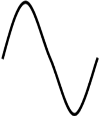
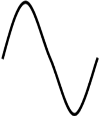
6 m

**(c)**

5 m

1.5 m

1. 24 water waves pass a point in 6 seconds.
   1. Calculate the frequency of the waves.
   2. Calculate the period of the wave.
2. A wave of wavelength 2.0 m travels 60 m in 12 seconds.



60 m

2 m

(a)Calculate the speed of the wave.

(b) State the number of waves that would be produced in 12 seconds.

(c) Determine the frequency of the wave.

(d) The quantity equal to 1/f

Electromagnetic Spectrum Questions

***The compendium might help you find these answers.***

1. The parts of the electromagnetic spectrum are shown below.

Visible Light

Infrared Radiation

Gamma Rays

Ultraviolet Radiation

X-Rays

Radio Waves

Microwaves

Rearrange these electromagnetic waves so that they are in order of increasing frequency.

1. State the speed of an electromagnetic wave in **a vacuum**.
2. State what happens to the **wavelength** of electromagnetic waves as **frequency** increases.
3. State happens to the energy of an electromagnetic wave as frequency increases.
4. The distance visible light to travel through **water** in a time of 8.761 **μs**
5. A radio carrier wave is sent out from BBC Radio 1 in London with a frequency of 97.50 MHz. A student in Edinburgh (which is 670 km away) is listening to the broadcast.
6. Calculate the wavelength of this radio wave.
7. Calculate the time it takes the wave to travel from London to Edinburgh.
8. Ultraviolet radiation is one of many types of radiation given off by the Sun. The ultraviolet radiation from the Sun takes 8 minutes to reach the Earth. Determine the distance between the Earth and the Sun.

Wave Equation Questions

1. A wave of frequency 8.00 Hz has a wave speed of 24.0 ms-1 calculate its wavelength.

2. Calculate the velocity of a wave in a ripple tank if its frequency is 12 Hz and its wavelength 0.03 m.

3. The speed of a wave is 1.50 ms-1 and its wavelength is 0.250m. Calculate the frequency of the wave.

4. A pupil is sent exam results by a text message on a mobile phone. The frequency of the signal received by the phone is 1900 MHz

The mobile phone receives radio waves (signals).

1. State the speed of the radio waves.
2. Calculate the wavelength of the signal.
3. The pupil sends a video message from the mobile phone. The message is transmitted by microwaves. The message travels a total distance of 72 000 **km**. Calculate the time between the message being transmitted and received

5. A source produces **480 waves every minute**. If the speed of the waves is **8** **ms -1**, calculate the distance between adjacent troughs.

6. The diagram shows part of an experimental wave tank used to test model oil rigs.



There is a wave generator at one end of the tank. Two depth markers, P and Q, are fixed to the bottom of the tank.

1. Ten waves are made in 5 seconds. Calculate the frequency of the waves.
2. The distance from the wave generator o the other end of the tank is 12 metres. 8 complete waves are made in this distance. Calculate the wavelength of the waves.
3. Calculate the speed of the waves.
4. As the waves travel along the tank, the length of the depth marker P seen above the water changes from 15 centimetres to 13 centimetres. Calculate the amplitude of the waves at depth marker P.