S.G. Physics Homework 1   **After Activity 2**   **Telecommunications Unit**

Name: _____   **Class:**_____   **Date Due:**_____

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1. (a) What is the speed of sound in air?   (1)

   (b) What is the speed of light in air?   (1)

2. A sound is found to travel a distance of 1332m in a time of 4s. Calculate the speed of sound.

                                                                                                  (2)

3. At an athletics event a spectator sees the starting official fire the starting gun. There is a
   delay between the spectator seeing the gun being fired and hearing the sound. The delay is a
   time of 1.5s. What is the distance between the spectator and the starting official?

                                                                                                  (3)

4. A girl standing 255 m from a cliff face claps her hands. If sound travels at a speed of 340m/s, how
long before she hears the echo of the clap?

                                                                                                  (3)

                                                                                                  ___
                                                                                                  10

1.

   (a) Correctly label the above diagram with the following names: earpiece, mouthpiece.

   (2)

   (b) Complete the table with the following names:

Part of telephone	Device	Energy Change
Earpiece		
Mouthpiece		

   (4)

2.
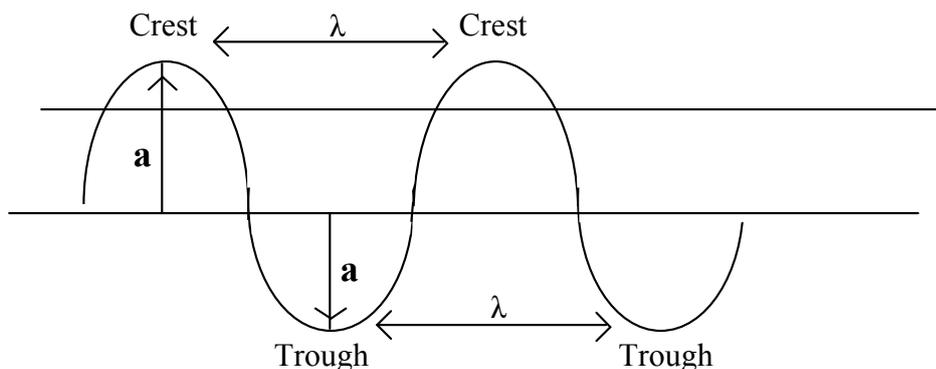
(a) Complete the table below with the corresponding wave term of definition.   (4)

Wave Term	Definition
	The distance a wave crest travels in one second.
Frequency	
	The distance between any point on one wave and the corresponding point on the next wave.
Amplitude	

(b) What is the formula to calculate the speed of a wave using the wavelength and frequency?

(1)

(c)
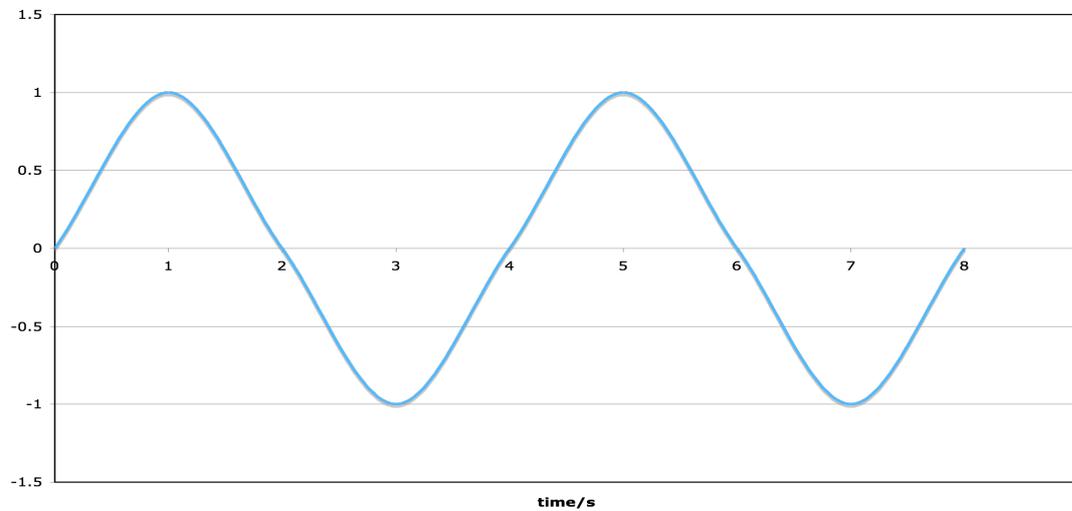
i) What is the frequency of the wave on the graph? (2)

ii) Calculate the wavelength of the sound wave shown on the graph. (2)

iii) What would be the frequency of a sound wave one octave higher than the sound wave shown?

(1)

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S.G. Physics Homework 3   After Activity 20   Telecommunications Unit

Name: _____   **Class:** _____   **Date Due:** _____

1. What is the speed of radio waves?   (1)

2. Complete the block diagram for a radio using the following terms:

   Amplifier, Decoder, Aerial, Tuner, Loudspeaker
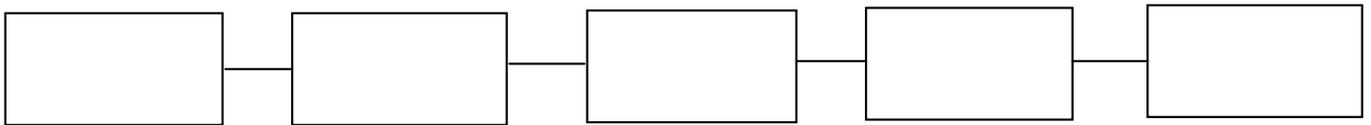
                                                                                                (5)

3. A particular radio transmitter can be identified by quoting either the value of its

   _____ or of its _____.   (2)

4. Complete the following table giving values for the frequency or wavelength for each radio station

(Hint use the formula v=fλ)

Radio Station	Frequency	Wavelength
Radio 1		3.015m
XFM	106.1MHz	
Real Radio		2.99m

                                                                                                (6)

5. (a) What is the bending of the waves round an obstacle called?   (1)

   (b) Which bend more, long or short wavelengths?   (1)

                                                                                                ‾‾
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S.G. Physics Homework 4   After Activity 27   Telecommunications Unit

Name: _____   **Class:** _____   **Date Due:** _____

1. The following is the block diagram for a television.

□	□	□	□	□
Aerial	Tuner	Decoder (audio)	Amplifier (audio)	Loudspeaker
		Decoder	Amplifier	T.V. Tube
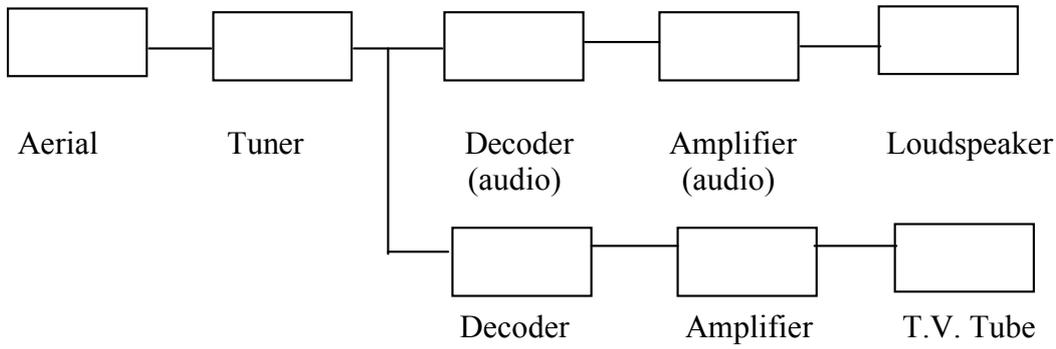
Choose three parts of the television and explain what they do.   (3)

2. Describe how a single picture is built up on a television screen.   (2)

3. Why do we see what appears to be a moving picture on a television screen. (2)

4. Name the colours produced when the three primary colours of a television are mixed together.
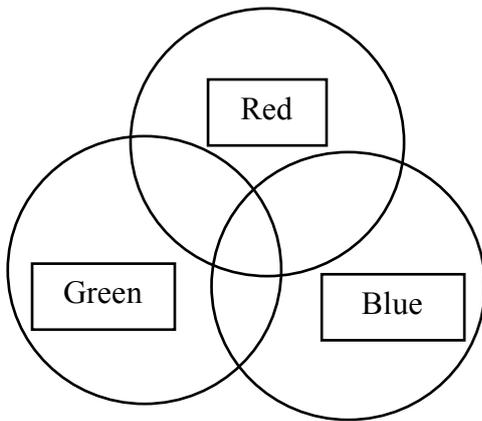
Red & Green   =

Red & Blue   =

Blue & Green =

5. (a) How many electron guns are there is a colour television? (1)

(b) How many different colours of phosphors are on a colour television screen? (1)

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**Name:** _____   **Class:**_____   **Date Due:**_____

1. What is the law of reflection?

Illustrate your answer with a neat labelled diagram.

(3)

2. (a) Complete the following diagram of an optical fibre showing the path of the ray of light.
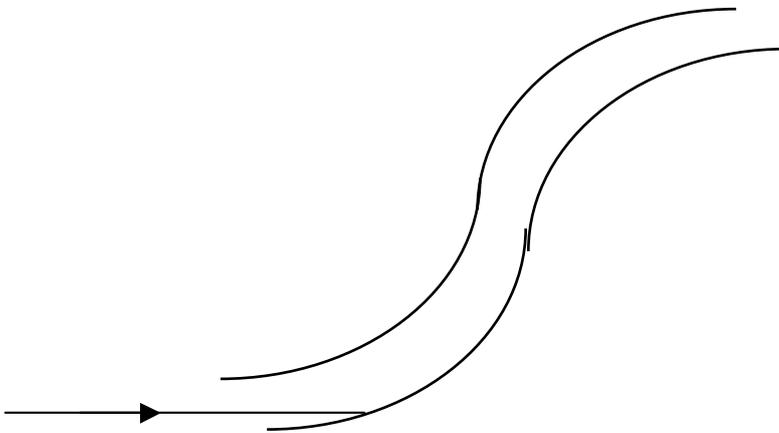
(2)

   (b) What is the speed of light in an optical fibre?   (1)

3. If a signal takes 5 x 10^{-4}s to travel through an optical fibre, calculate the length of the optical fibre.

(2)

4. What does the period of a satellite's orbit depend upon? (1)

5. (a) What is a geostationary satellite? (2)

(b) At what height is a geostationary satellite? (2)

6. Explain, using a diagram why a curved dish makes the received signal stronger. (3)

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