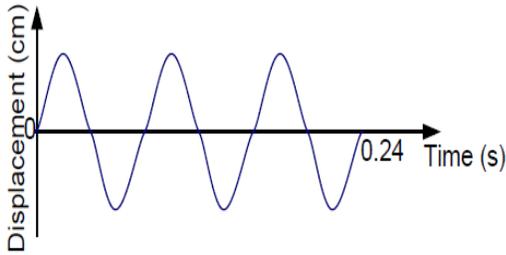1. The diagram below represents a wave

(a) Mark on the diagram the amplitude and label it, A

(b) How many cycles are shown on the diagram

(c) calculate the period for the wave

2. (a) Forty waves are generated in 2 s. If the waves occupy a distance of 1.6 m, calculate
    (i)   Frequency of the waves
    (ii)   speed of the waves
   (b) What is meant by diffraction of waves
   (c) Draw a diagram to show the path of plane water waves through a narrow gap
   (d) State two factors that's that determine the intensity of sound
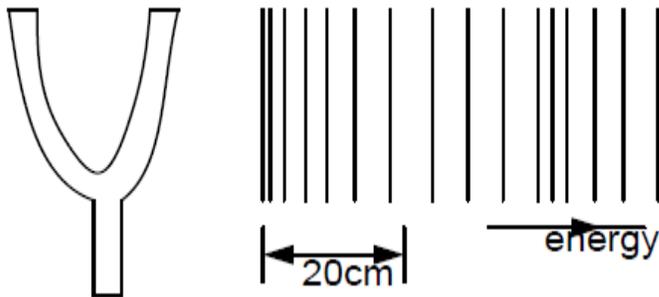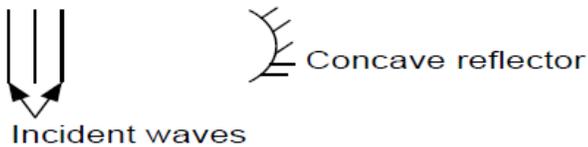
3. (a) What is a longitudinal wave?
   (b)

   Figure shows a sound wave produced from a tuning fork vibrating at 800 Hz. Calculate the velocity of the wave in the medium

   (c) State two factors which determine the velocity of sound in air

4. (a)

   The figure shows straight water waves approaching a concave surface. Complete the diagram to show how it will be reflected.

   (b) State what would happen to the waves if the concave surface was removed and depth of water reduced.
   (c) What is an echo?
   (d) When a hunter fires a gun, an echo from a cliff is heard 8s later. How far is the hunter from the cliff.
        (Speed of sound = 340m/s)
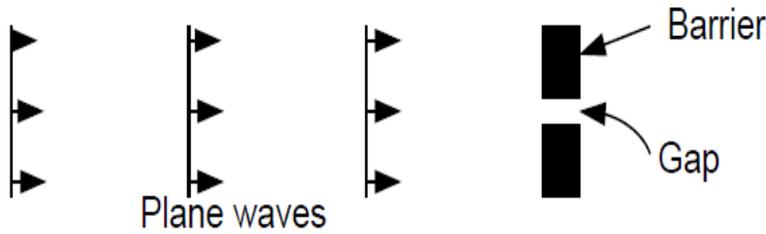   (e) State one practical application of echoes

1

5. (a)
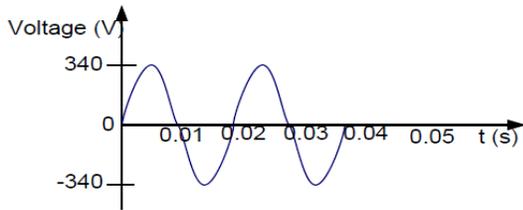
The graph above shows the variation of an $a.c$ with time

Find;

(i) the peak voltage

(ii) the frequency
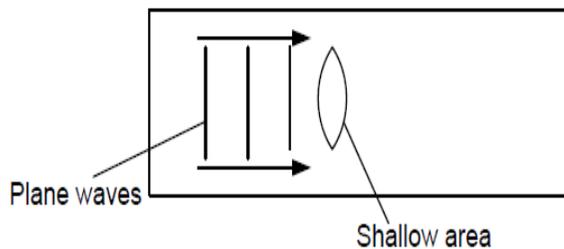
(b)

Plane waves

The figure shows plane waves approaching a gap in a barrier.

6. (a) What is meant by refraction?

(b)

Plane waves

Shallow area

Plane waves are generated at one end of a ripple tank. The waves travel towards the other end through a shallow region having the shape shown above. Complete the diagram to show the wave fronts

7. (a) Define the following as applied to the wave motions
    (i)   Frequency
    (ii)   Wave length
   (b) What are transverse waves?
   (c) A radio station transmits signals at a frequency of 103.7MHz. Find, the wavelength of the signals and state any assumption made
   (d) Draw a diagram to show the pattern for a straight water wave passing through a narrow slit
   (e) Describe an experiment to demonstrate that sound waves require a material medium for their propagation
   (f) Explain how sound waves travel through air

8. (a) Define the following as applied to the wave motions
    (i)   Frequency
    (ii)   Wave length
   (b) Draw diagrams to show circular water ripples are reflected from
    (i)   concave reflector
    (ii)   convex reflector
   (c) (i) Distinguish between longitudinal waves and transverse waves
       (ii) Give one example of each of the waves in (c) (i)
   (d) State four properties of electromagnetic waves
   (e) The distance between two successive antinodes on a standing wave is 3.0 cm. If the distance between the source of wave and reflector is 24.0cm, find the
    (i)   Number of loops
    (ii)   Wavelength of the wave

8. (a) Defines the following terms as applied to waves.
       (i)   amplitude
       (ii)   frequency
    (b) (i)   What is meant by interference of waves
       (ii)   Using a labeled diagram, show how circular water waves are reflected from a straight barrier
    (c) (i)   Use a labeled diagram to show the bands of an electromagnetic spectrum
       (ii)   Calculate the frequency of a radio wave of wavelength 2m.
    (d) With the aid of a diagram, show dispersion of light by a prism

9. (a) Give the two differences between transverse and longitudinal waves.
    (b) Two identical sources are made to produce circular waves in a ripple tank.
       (i)   Explain with the aid of diagram how interference fringes may be obtained.
       (ii)   What happens when the distance between the sources reduced?
    (c) A vibrator of frequency 50Hz produces circular waves in a ripple tank. If the distance between any two consecutive crests is 3cm, what is the speed of the waves?
    (d) (i)   Explain why echoes are not heard in small rooms.
       (ii)   Describe a simple echo method of determining the speed of sound in air.

10. (a) What is meant by sound?

    (b) Describe the experiment to show that sound waves require a material medium for transmission.
    (c) Explains briefly the following
       (i)   A dog is more able than a human being to detect the presence of a thief tiptoeing at night.
       (ii)   An approaching train can easily be detected by a human car placed close to the rays rails.
    (d) A sound of frequency 250Hz is produced 120m away from a high wall calculate the
       (i)   Wavelength
       (ii)   Time it takes the sound wave to travel to and from the wall (speed of sound in air = 330m/s)

END