Practice Question Set For GCSE
Subject : Physics
Paper-2 Topic: GCSE Triple Science_Waves (HDQ)

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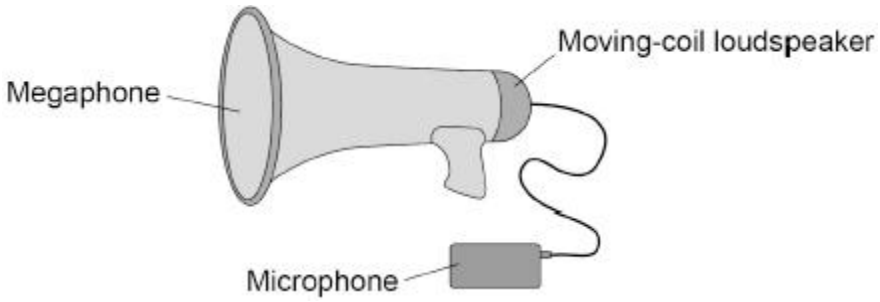
Name of the Student:_____
Max. Marks : 24 Marks **Time : 24 Minutes**

Q1.

A megaphone uses a loudspeaker to amplify sounds that are detected by a microphone.

Figure 1 shows a megaphone and microphone.

Figure 1



(a) Complete the sentence.

The microphone is used to convert the pressure variations in sound waves into

variations in _____.

(1)

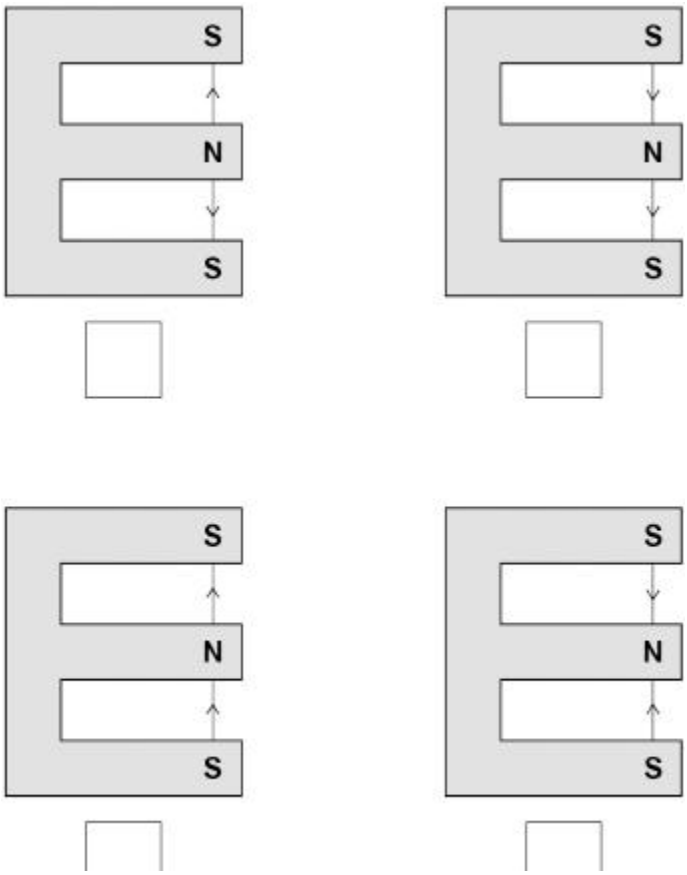
(b) The loudspeaker contains a permanent magnet.

Which diagram in **Figure 2** shows the direction of the magnetic field between the north pole and the south pole of the magnet?

The magnets are shown in cross-section.

Tick (✓) **one** box.

Figure 2



(1)

(c) Some magnets are permanent magnets and some are induced magnets.

What is an induced magnet?

_____

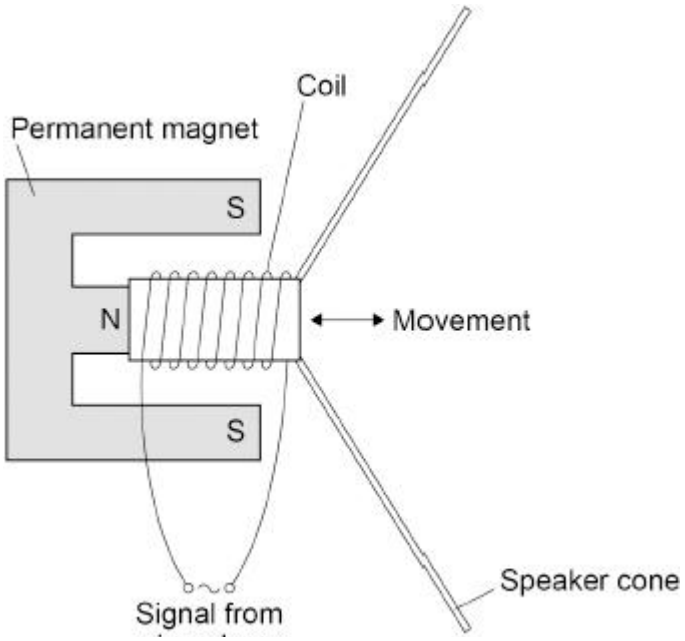
_____

_____

(1)

Figure 3 shows the parts of the loudspeaker in the megaphone.

Figure 3



A current in the coil of the loudspeaker causes the coil to move.

(d) What is the name of the effect that causes the coil to move?

Tick (✓) **one** box.

Electromagnet effect	☐
Induction effect	☐
Motor effect	☐
Speaker effect	☐

(1)

(e) When the current in the coil is 16 mA, the force on the coil is 0.013 N.

The length of the wire that makes up the coil is 6.5 m.

Calculate the magnetic flux density around the coil in the electromagnet.

Use the Physics Equations Sheet.

_____

_____

_____

_____

_____

Magnetic flux density = _____ T

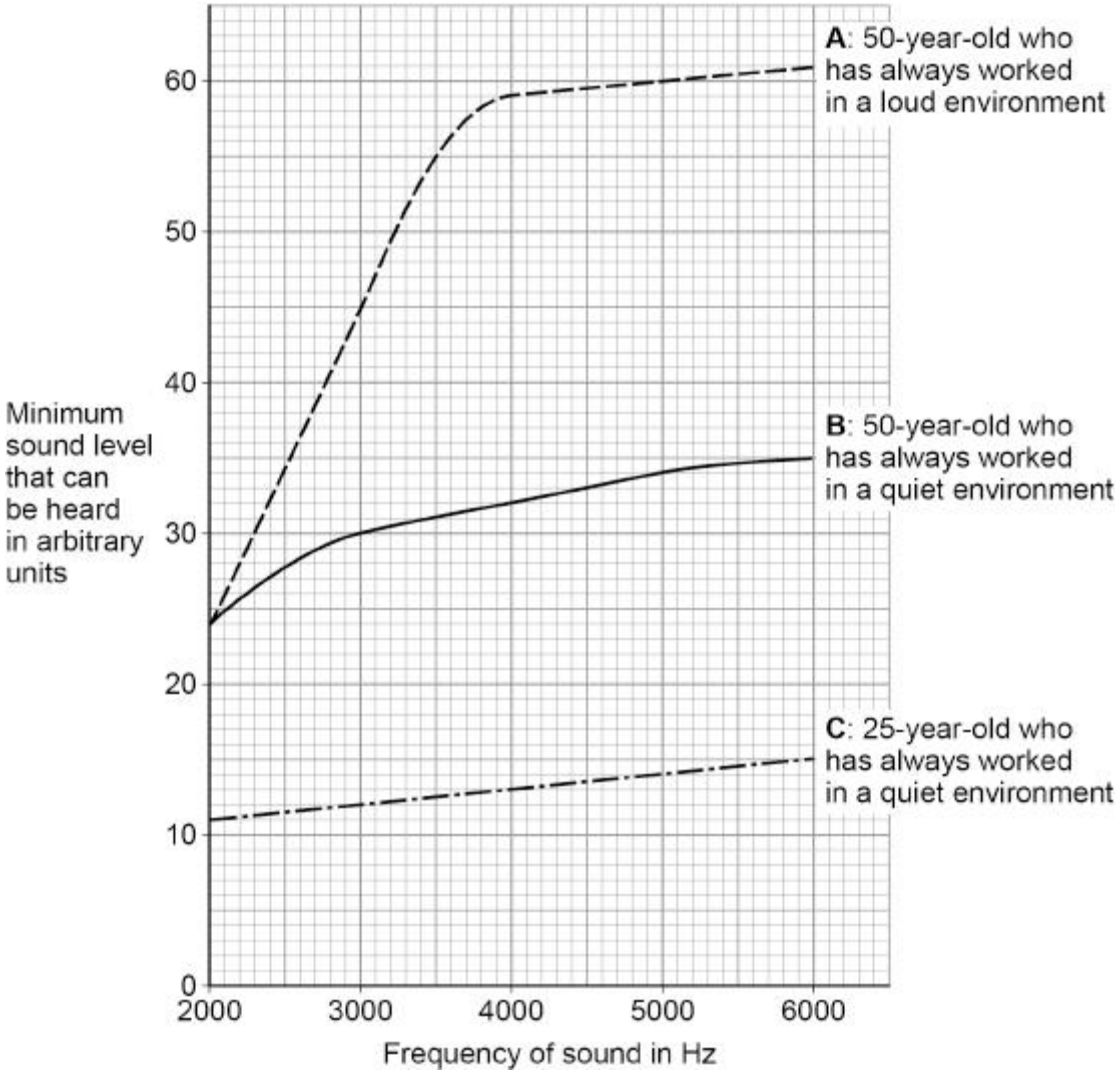
(4)

(f) Megaphones can produce very loud sounds.

A person's hearing can be affected by age and by working in a loud environment.

Figure 4 shows how frequency affects the minimum sound level that can be heard by three different people, **A**, **B** and **C**.

Figure 4



Compare how different factors affect the minimum sound level that these people can hear.

_____

_____

_____

_____

_____

_____

_____

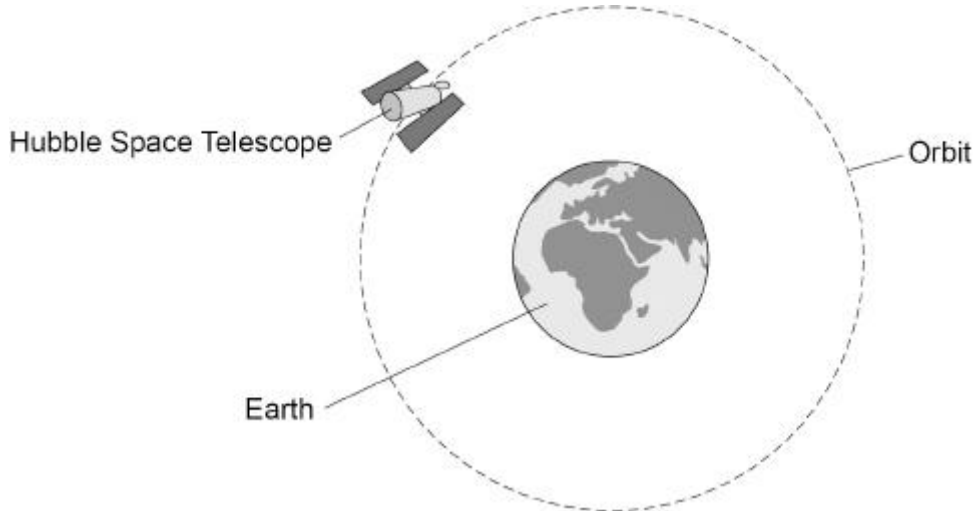
(4)

(Total 12 marks)

Q2.

Figure 1 shows the Hubble Space Telescope orbiting the Earth.

Figure 1



(a) What name is given to objects that orbit a planet?

_____

(1)

(b) A space telescope uses microwaves to communicate with the Earth.

A microwave has a wavelength of 12.5 cm.

The speed of microwaves through space is 3.0×10^8 m/s.

Calculate the frequency of the microwave.

Use the Physics Equations Sheet.

Give your answer in standard form.

_____

_____

Frequency (in standard form) = _____ Hz

(5)

(c) Explain the effect of the Earth's gravitational force on the motion of the Hubble Space Telescope.

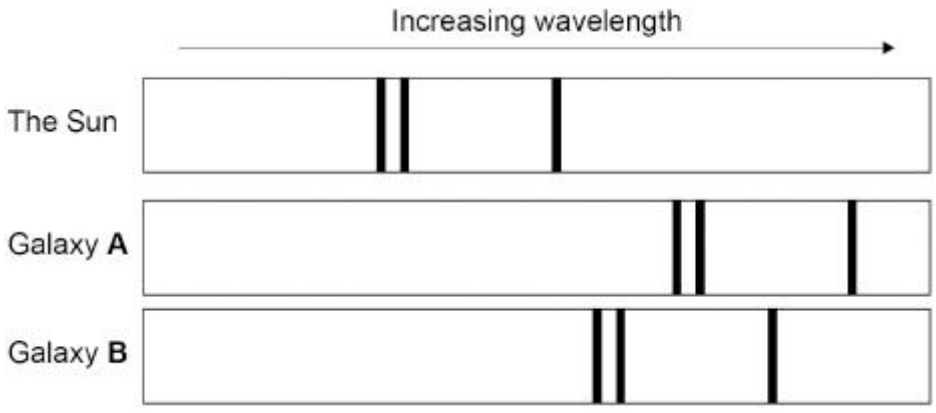
(3)

(d) The Hubble Space Telescope can detect visible light from distant galaxies.

The visible light spectra from stars and galaxies include dark lines at specific wavelengths.

Figure 2 shows the visible light spectra from the Sun and two galaxies.

Figure 2



Explain what conclusions can be made about galaxies **A** and **B**.

_____

_____

_____

(3)

(Total 12 marks)