

Name of the Student: _____

Max. Marks : 19 Marks

Time : 19 Minutes

Q1.

Waves may be either longitudinal or transverse.

- (a) Describe the difference between a longitudinal and a transverse wave.

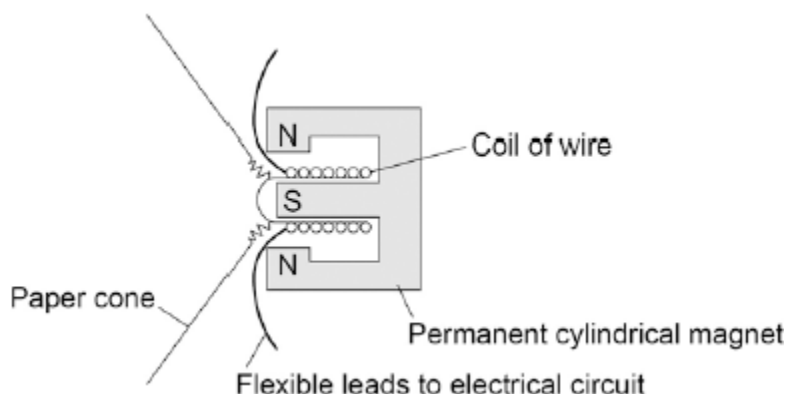
(2)

- (b) Describe **one** piece of evidence that shows when a sound wave travels through the air it is the wave and not the air itself that travels.

(1)

- (c) The figure below shows the parts of a moving-coil loudspeaker.

A coil of wire is positioned in the gap between the north and south poles of the cylindrical magnet.



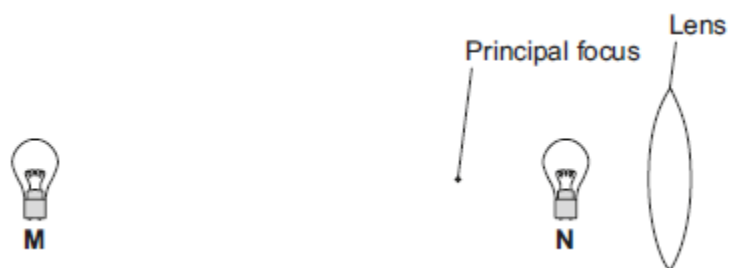
Explain how the loudspeaker converts current in an electrical circuit to a sound wave.

(6)
(Total 9 marks)

Q2.

- (a) A light bulb is placed between a convex lens and the principle focus of this lens, at position **N** shown in **Figure 1**. The light bulb is then moved to position **M**, a large distance from the lens.

Figure 1



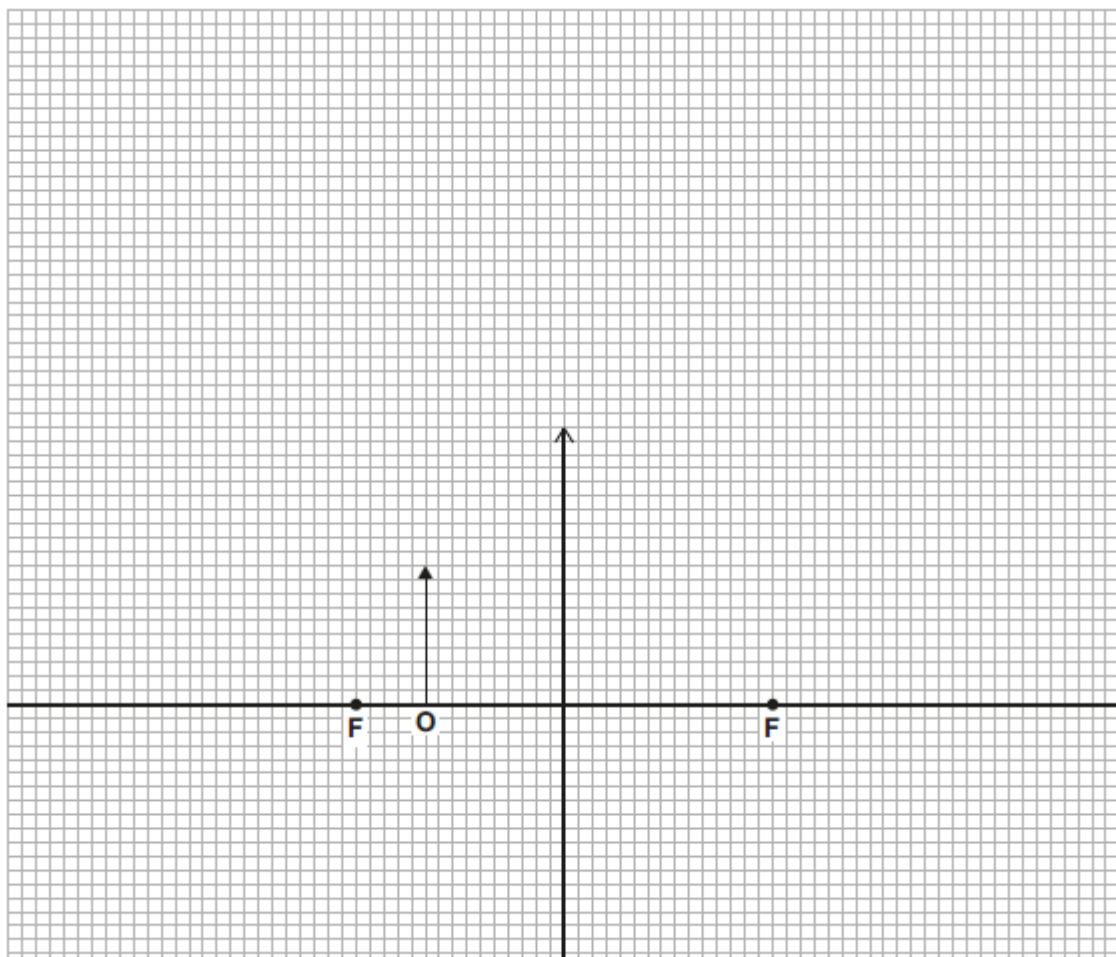
Describe how the nature of the image formed changes as the light bulb is moved from position **N** to position **M**.

(3)

- (b) An object, **O**, is very near to a convex lens, as shown in **Figure 2**.

Complete **Figure 2** to show how rays of light from the object form an image.

Figure 2

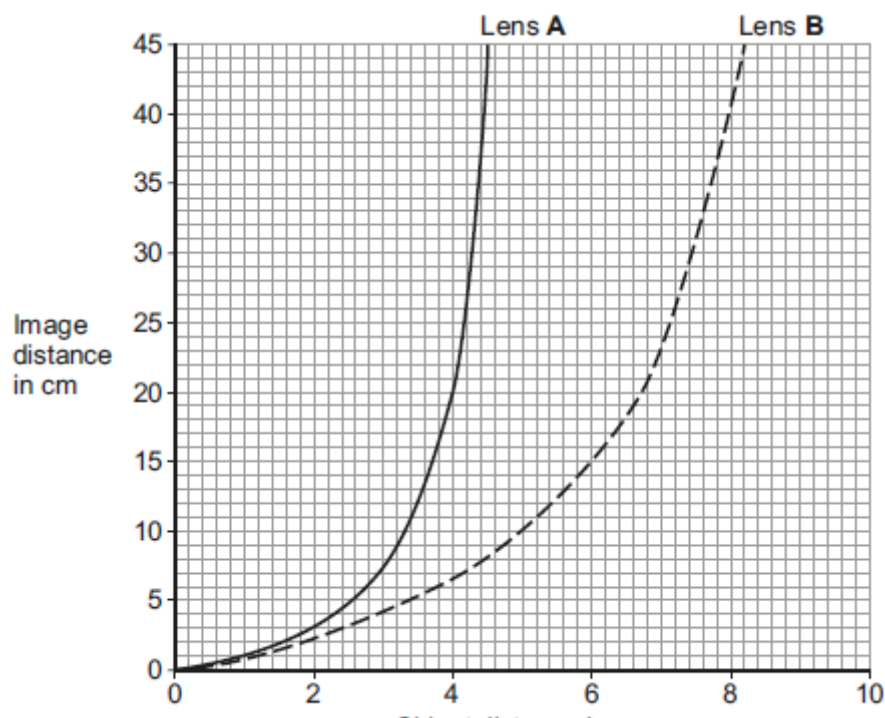


(3)

- (c) The object distance is the distance from an object to the lens. The image distance is the distance from the lens to the image.

Figure 3 shows how the image distance changes with the object distance, for two identically shaped convex lenses, **A** and **B**. Each lens is made from a different type of glass.

Figure 3



- (i) When the object distance is 4 cm, the image distance for lens **A** is longer than for lens **B**.

State why.

(1)

- (ii) When the object is moved between lens **B** and the principal focus, the image size changes. The table shows the magnification produced by lens **B** for different object distances.

Object distance in cm	Magnification
0.0	1
5.0	2
6.7	3
7.5	4
8.0	5

Using information from **Figure 3** and the table, describe the relationship between the **image** distance and the magnification produced by lens **B**.

(2)

- (iii) A third convex lens, lens **C**, is made from the same type of glass as lens **B**, but has a shorter focal length than lens **B**.

Lens **B** is shown in **Figure 4**.

Complete **Figure 4** to show how lens **C** is different from lens **B**.

Figure 4



Lens **B**

Lens **C**

(1)

(Total 10 marks)