

GCSE Physics B (Twenty First Century Science)
J259/04 Depth in physics (Higher Tier)

Question Set 30

Multiple Choice Questions

1

Ben and Ali want to make a loudspeaker to connect to a mobile phone.

They build a loudspeaker from a plastic cup, permanent magnet and coil of wire as shown in **Fig. 10.1**.

An alternating current flows through the coil of wire when music is played on the mobile phone. This alternating current matches the pattern of the sound waves from the music.

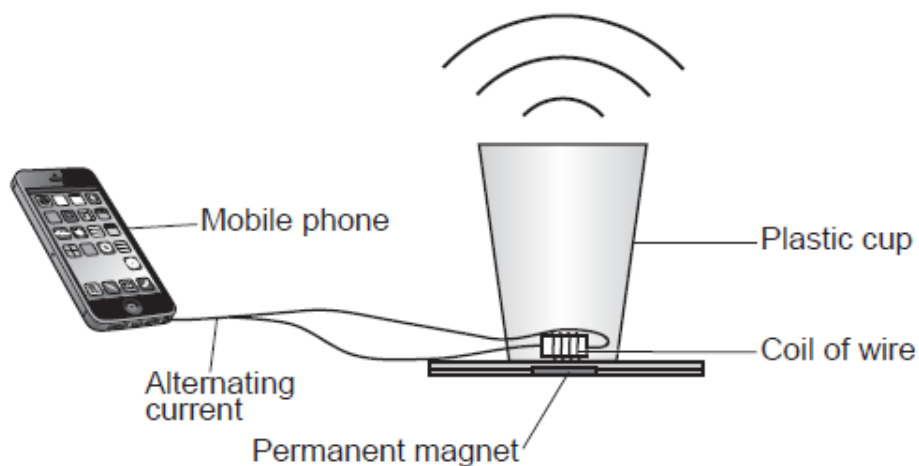
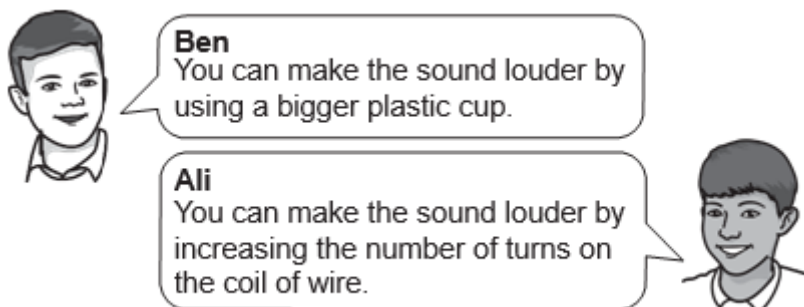


Fig. 10.1

- (a) (i) When Ben connects the loudspeaker to his mobile phone and plays music, the sound produced is very quiet, even on the phone's maximum volume.



Who do you agree with?

Ben

Ali

Explain your answer.

[3]

- (ii) When Ben's mobile phone is connected to the loudspeaker it produces a sound which has a wavelength of 24 cm.

Calculate the frequency of the sound produced.

Give your answer to **2** significant figures.

The speed of sound in air is approximately 340 m/s.

Frequency = Hz **[5]**

- (b) Ben removes the battery shown in **Fig. 10.2** from his mobile phone, and connects the battery directly to the coil of wire.

No sound is produced.



Fig. 10.2

Explain why the direct current supplied by the mobile phone battery does **not** generate a sound from the loudspeaker.

[4]

Total Marks for Question Set 30: 12

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