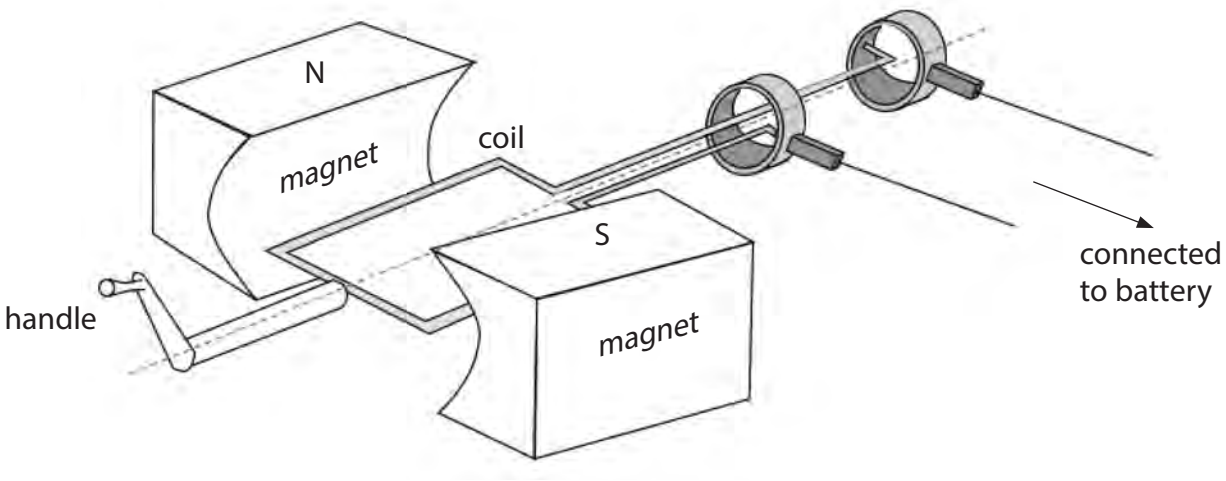
9 This question is about a radio powered by a person turning a handle.

The radio has a battery which stores energy when the handle is turned.

(a) The diagram shows the part of the radio called a generator.

The generator produces a voltage which does electrical work on the battery.



Explain how the generator produces a voltage.

(3)

(b) The radio receives a radio wave of frequency 93 MHz.

(i) State the formula linking speed, frequency and wavelength of a wave.

(1)

(ii) Calculate the wavelength of the radio wave.

[speed of radio waves = 3.0×10^8 m/s]

(3)

wavelength = ... m

(c) The signal received by the radio is converted into an alternating current (a.c.) signal.

(i) Describe how the loudspeaker in the radio converts this a.c. signal into a sound wave.

(4)

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(ii) State a modification that would increase the force on the loudspeaker coil.

(1)

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(Total for Question 9 = 12 marks)