10 **(a)** State Lenz's law.

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..... [2]

(b) A metal ring is suspended from a fixed point P by means of a thread, as shown in Fig. 10.1.

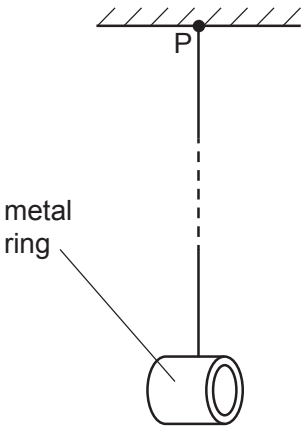

Fig. 10.1

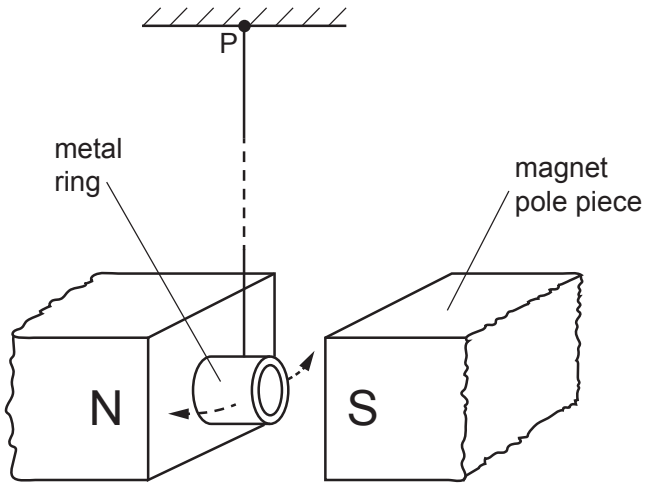

Fig. 10.2

The ring is displaced a distance *d* and then released. The ring completes many oscillations before coming to rest.

The poles of a magnet are now placed near to the ring so that the ring hangs midway between the poles of the magnet, as shown in Fig. 10.2.

The ring is again displaced a distance *d* and then released.
Explain why the ring completes fewer oscillations before coming to rest.

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..... [4]

(c) The ring in **(b)** is now cut so that it has the shape shown in Fig. 10.3.

Fig. 10.3

Explain why, when the procedure in **(b)** is repeated, the cut ring completes more oscillations than the complete ring when oscillating between the poles of the magnet.

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..... [3]

[Total: 9]