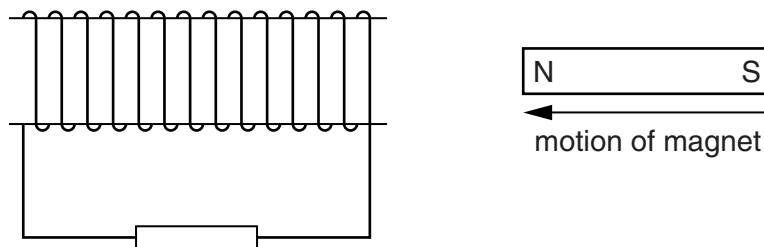


- 7 (a) A solenoid is connected in series with a resistor, as shown in Fig. 7.1.



**Fig. 7.1**

As the magnet is being moved into the solenoid, thermal energy is transferred in the resistor. Use laws of electromagnetic induction to explain the origin of this thermal energy.

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- (b) Explain why the alternating current in the primary coil of a transformer is not in phase with the alternating e.m.f. induced in the secondary coil.

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