

- (a) State the value of the angle of incidence at point P. [1]
 (b) State two conditions needed so that no light refracts from the glass into the air at point Q. [2]

Q.3

Fig. 3.2 shows the apparatus a student uses to produce an alternating current (a.c.).

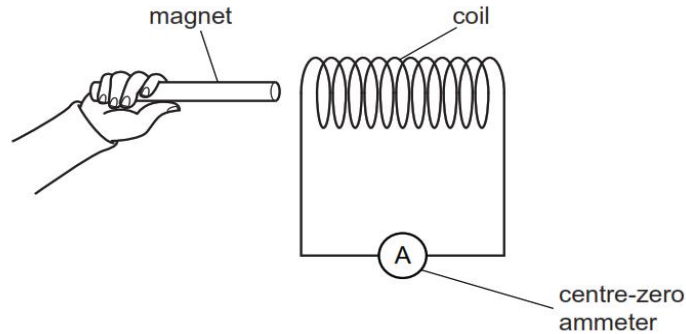


Fig. 3.2

The magnet is moved into and out of the coil.

- (a) Explain why a current is produced when the magnet moves. [2]
 (b) Describe the movement of the magnet that produces an a.c. of frequency 0.50 Hz. [1]

Long Question:

Q.4

- (a) Fig. 4.1 is a picture of a nebula formed from a supernova.



Fig. 4.1

- (i) State what is meant by 'a supernova'. [1]
 (ii) Describe how a protostar forms inside a nebula. [2]
 (b) Alpha particles are sometimes emitted from the nuclei of radioactive elements. This emission is both random and spontaneous.
 (i) Describe what is meant by 'spontaneous' emission. [1]
 (ii) Describe the composition of an alpha particle. [2]