

- 6 Fig. 6.1 shows a long solenoid which has a small copper disc mounted at its centre.

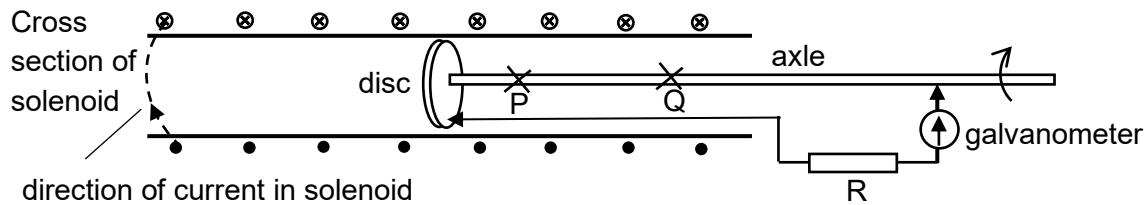


Fig. 6.1

The disc spins on a conducting axle which lies along the axis of the solenoid. The solenoid is connected in series with a d.c. supply and the direction of the current in the solenoid is as shown in Fig. 6.1. One end of the resistor is connected to the rim of the disc through brushes. The other end is connected to a galvanometer.

- (a) (i) Indicate the direction of the induced current between point P and Q with an arrow on Fig. 6.1.

[1]

- (ii) Explain why an e.m.f. is generated between the axle and the rim of the disc when the disc rotates.

[3]

(b) State the effect on the galvanometer, if any, when

(i) the speed of the rotation of the disc is increased,

[1]
.....

(ii) the direction of the rotation of the disc is changed.

[1]
.....

(c) A voltmeter is now connected across the rim of the disc. Explain why there is no reading.

[2]
.....
.....

[Total: 8]