

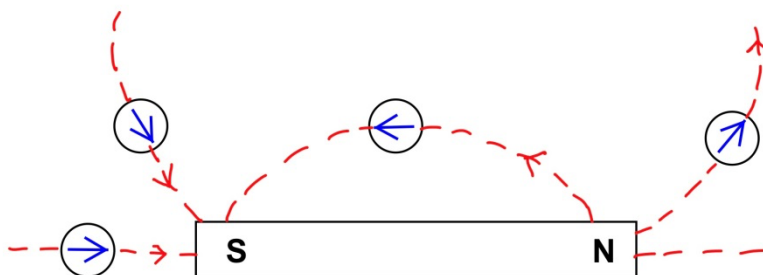


2026 Sec 4 Physics Assignment 17 Magnetism - Answers

Problem solving approach

- Consider the nature of the materials used: permanent magnet or magnetic material.
- Consider processes of magnetisation, magnetic induction, magnetic screening (or shielding).
- Apply law of magnetism where relevant.

- 1(a) The ring must be made of a magnetic material.
When the bar magnet is brought near to the ring, an unlike pole is induced on the left side of the ring, which would be a south pole. Since unlike poles attract, the ring is attracted to the bar magnet.
- (b) A possible material is (soft) iron.
Since the ring is attracted, an unlike pole is induced on the right side of the ring, which would be a south pole. Since the poles have changed, the magnetic material does not retain magnetism easily.
- 2 **Approach:** trace the direction of the magnetic field lines around the bar magnet to pass through each compass.



- 3(a) Arctic: magnetic south pole; Antarctic: magnetic north pole
- (b) Although the earth is a giant magnet, the strength of its magnetic field is very weak. The magnetic force is much smaller than the gravitational force, hence the net force is towards the ground.

Note:

- The magnetic field of the earth is only about 1/2000 of that between the poles of a horseshoe magnet. Therefore, objects on the earth are attracted more strongly by the gravitational force as compared to the magnetic force.]