



2024 Sec 4 Physics Chapter 18

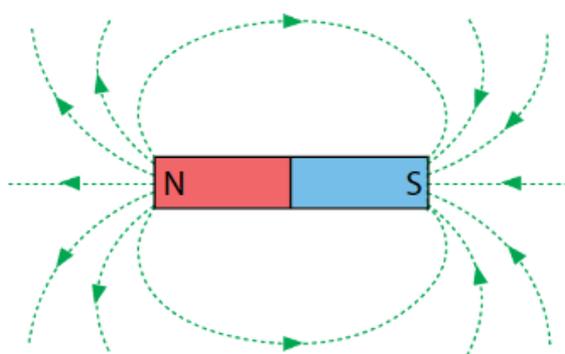
Magnetism- ANSWERS

Example 1

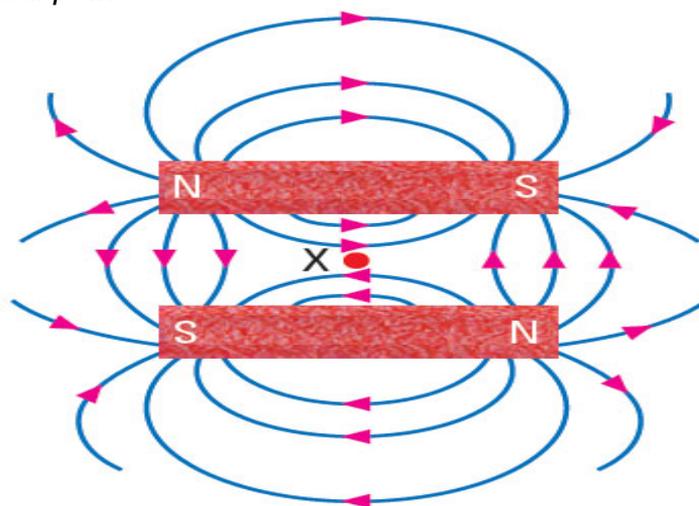
Steel is a magnetic material. The two needles will be induced with unlike poles at its ends. Since unlike poles attract, the ends will be attracted to each other.

Example 2

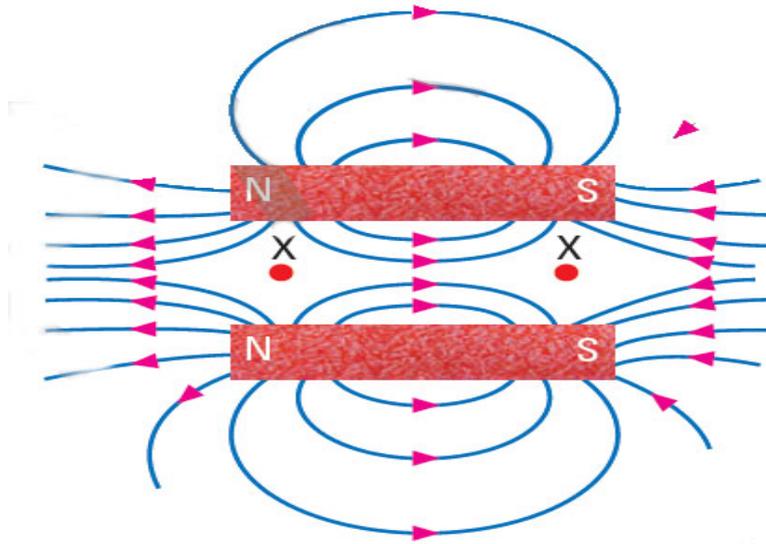
(a)



(b) Note: X is the neutral point



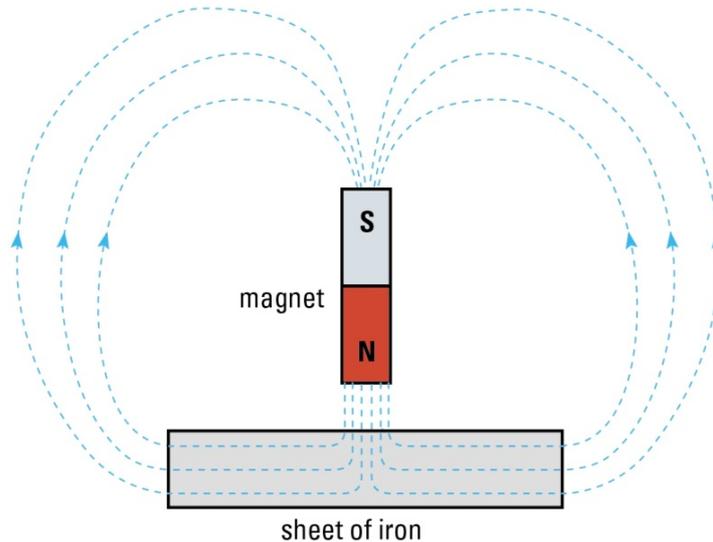
(b)



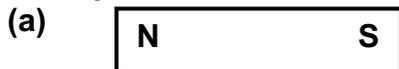
Example 3

Note:

- *The magnetic field lines have to be drawn as continuous lines.*
- *A compass placed below the sheet of iron will not detect any magnetic field line from the North pole of the bar magnet now!*



Example 4



The end of the magnet near to the compass is a north pole since unlike poles attract.

(b) At the position of the compass needle, the magnetic field due to the bar magnet is much stronger than the Earth's. The compass needle changes its direction since unlike poles attract and its south pole is attracted to the north pole of the magnet.

(c) As the bar magnet moves away from the compass, the compass needle in position shown in Fig. 4b gradually rotates clockwise till it is in position shown in Fig. 4a again. This is because the magnetic field due to the bar magnet decreases to zero, as it moves far away from the compass, such the compass is again influenced only by the Earth's field.

[Note: This can also be explained by considering the direction of the compass as showing the vector addition of the magnetic field strengths of the bar magnet and the Earth.]

Exercises

- 1 D
- 2 C
- 3 B
- 4 D
- 5 C
- 6 B
- 7 C