

CHAPTER-4 | Exploring Magnets

QUIZ
PART-03

1. A freely suspended bar magnet comes to rest along the _____ direction.
A. East–West
B. North–South
C. Northeast–Southwest
D. Random (B)

Explanation : A magnet that can rotate freely settles along the north–south direction due to Earth’s magnetic field.

2. The end of a magnet that points toward the north is called the _____.
A. East Pole
B. North Pole
C. South Pole
D. Magnetic tip (B)

Explanation : The end pointing north is the North Pole; the opposite end is the South Pole.

3. In the suspended magnet experiment, repeated rotations show that the magnet _____.
A. Aligns differently every time
B. Returns to the same line each time
C. Spins continuously without stopping
D. Points east–west consistently (B)

Explanation : After gentle rotation, the magnet repeatedly settles along the same north–south line.

4. Replacing the suspended magnet with a small iron bar leads to which observation?
A. It also aligns north–south consistently
B. It does not align north–south consistently
C. It breaks into pieces with poles
D. It heats up and loses magnetism (B)

Explanation : An ordinary iron bar does not reliably align north–south; this helps distinguish magnets from non-magnets.

5. Which step is essential when magnetizing a needle with a bar magnet?
A. Stroke back and forth along the needle
B. Move the magnet in one direction only and lift at the end
C. Rub both poles alternately along the needle
D. Tap the magnet on the needle repeatedly (B)

Explanation : Magnetize by stroking in a single direction with one pole, lifting off at the far end.

6. About how many times should the stroking be repeated to magnetize the needle?
A. 2–3 times
B. 10–15 times
C. 30–40 times
D. 60–80 times (C)

Explanation : Repeating the one-direction stroke roughly 30–40 times induces magnetism in the needle.

7. Which set lists materials needed to construct a simple floating compass?
A. Cork, magnetized needle, glass bowl with water
B. Paperclip, battery, bulb
C. Wooden stick, sand, saltwater
D. Plastic straw, vinegar, coin (A)

Explanation : The setup uses a magnetized needle passed through a cork that floats in a water-filled bowl.

8. For the floating compass to work properly, what must be ensured?
A. The needle sinks below water
B. The needle floats freely above the water level on the cork
C. The cork is fixed to the bowl
D. Oil is added to the water (B)

Explanation : The needle must float freely so it can rotate and align with the north–south direction.

9. Matsya-yantra (machchhyantra) was used for what purpose and how was it constructed?
A. Star tracking; stone disc in sand
B. Navigation; magnetized fish-shaped iron in a vessel of oil
C. Timekeeping; wooden wheel in water
D. Weather prediction; glass tube with mercury (B)

Explanation : It was an indigenous navigation tool using a magnetized fish-shaped iron piece floating in oil, aligning with Earth’s magnetic field.

10. Why should the compass dial be aligned with the needle before use?
A. To heat the needle
B. To read all four directions correctly from the dial
C. To demagnetize the needle
D. To measure distance traveled (B)

Explanation : Aligning the dial with the resting needle allows north, south, east, and west to be read accurately.