

Distinguish, differentiate, compare and explain what is the difference and similarities between Bar Magnet and Solenoid. Similarity, Comparison and Differences.

Differences between Bar Magnet and Solenoid

S.No.	Bar Magnet	Solenoid
1	It has its natural magnetism.	Its magnetism is created like a type of artificial magnetism.
2	Its magnetism cannot be destroyed; it is always present.	Its magnetism can be destroyed or it can be stopped anytime.
3	Its magnetism does not depend on any external applied factor.	Its magnetism depends on various external applied factors like current, number of turns etc.
4	Its magnetism cannot be increased or decreased by any other external way.	Its magnetism can be increased or decreased depending upon our requirements.

Similarities between Solenoid and Bar Magnet

1. Both have attractive and directive properties.
2. Their magnetic field lines are exactly identical.

What is a Bar Magnet ?

A bar magnet has two poles. One pole is designated as the North pole and the other as the south pole. When iron filings are sprinkled around a bar magnet, they are arranged in a pattern similar to the one seen around a current carrying solenoid.

Bar magnet as an equivalent solenoid

Ampere hypothesized that all magnetic phenomena are due to circulating currents. The similarity between magnetic field lines produced due to a bar magnet and a current carrying solenoid suggests that a bar magnet may be thought of as a large number of circulating atomic currents in analogy with a solenoid.