

O P JINDAL SCHOOL, SAVITRINAGAR

CLASS TEST & PRACTICE

ANSWER KEY

CLASS X PHYSICS

TOPIC : MAGNETIC EFFECT
OF CURRENT AND
MAGNETISM

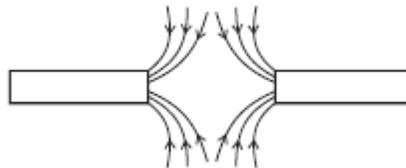
- 1 State the observation made by Oersted on the basis of his experiment with current carrying conductors. 1

ANS: The electric current passing through a conducting wire produces magnetic effect.

- 2 Name the device which is used to draw magnetic field lines. 1

ANS: Compass needle.

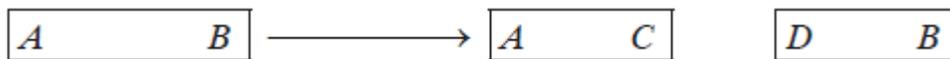
- 3 1



Identify the poles of the magnet in the given figure.

ANS: Both the poles facing each other represent south pole in nature as the magnetic field lines outside the magnet move from North to South Poles.

- 4 A magnet AB is broken into two pieces. What is the polarity of A, B, C and D? 1



ANS: If A is the North pole, then
C – South pole D – North pole B – South pole

- 5 What is the direction of magnetic field lines inside and outside of a bar magnet? 1

ANS: Direction of magnetic field lines:
Inside a bar magnet: from South pole to North pole.
Outside of a bar magnet: from North pole to a South pole.

- 6 A magnetic needle deflects when it's brought near a current carrying conductor. Why? 1

ANS: Magnetic force exerted by the magnetic field produced by the straight current carrying conductor causes the deflection in the needle.

- 7 Suggest one way of discriminating a wire carrying current from a wire carrying no current. 1

ANS: Deflection in the compass needle discriminates a wire carrying current from a wire carrying no current.

- 8 State the conclusions that can be drawn from the observation that a current carrying wire deflects a magnetic 1

needle placed near it.

ANS: Current carrying wire exhibits properties of magnetism which indicate that electricity and magnetism are related phenomena.

9 How can you show that the magnetic field produced by a given electric current in the wire decreases as the distance from the wire increases? 1

ANS: The decrease in deflection of the magnetic compass needle clearly shows that the magnetic field decreases as we move away from the current-carrying conductor.

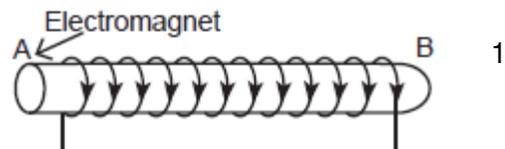
10 A current carrying straight wire held perpendicular to the plane of paper and current passes through this conductor in the vertically upward direction. What is the direction of magnetic field produced around it? 1

ANS: According to right-hand thumb rule, the direction of magnetic field produced around the given conductor is anticlockwise.

11 If the circular coil has n turns, the field produced is n times as large as that produced by a single turn. Justify it. 1

ANS: This is because the current in each circular turn has the same direction, and the field due to each turn then just adds up along the axis of the coil

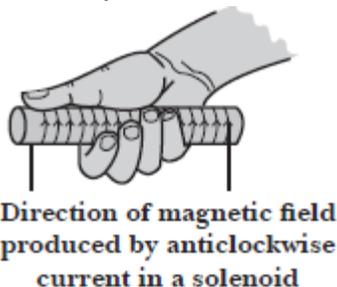
12 The diagram shows a coil of wire wound on a soft iron core forming an electromagnet. A current is passed through the coil in the direction



indicated by the arrows. Mark the N and S poles produced in the iron core.

ANS: Using clock face rule
A is South pole. B is North pole.

13 How will you determine the direction of the magnetic field due to a current-carrying solenoid? 1



ANS: Direction of magnetic field: Imagine the current carrying solenoid in your right hand such that the curled fingers are in the direction of current, then the extended thumb will indicate the direction of emerging magnetic field line, i.e. the face of solenoid which has North polarity.

14 What will the polarity be of one end of a solenoid if the current appears to be flowing anticlockwise in it? 1

ANS: North pole by using Clock Face Rule.

15 Magnetic field inside the solenoid is uniform or non-uniform?

1

ANS: Uniform