Chapter - 13

Magnetic Effects of Electric Current

(Assertion and Reasoning Questions)

Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

(a) Both A and R are true and R is the correct explanation of A.

(b) Both A and R are true but R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

Q.1. Assertion (A) : On changing the direction of flow of current through a straight conductor, the direction of a magnetic field around the conductor is reversed.

Reason (R) : The direction of magnetic field around a conductor can be given in accordance with left hand thumb rule.

Q.2. Assertion (A) : The magnitude of the magnetic field at a point on the axis of a current carrying solenoid is inversely proportional to the current flowing through the solenoid.

Reason (R) : The magnitude of the magnetic field at a point on the axis of a current carrying solenoid is directly proportional to the number of turns per unit length of a solenoid.

Q.3. Assertion (A) : A compass needle is placed near a current carrying wire. The deflection of the compass needle decreases when the magnitude of an electric current in the wire is increased.

Reason (R) : Strength of a magnetic field at a point near the conductor increases on increasing the current.

Q.4. Assertion (A) : A compass needle is placed near a current carrying wire. The deflection of the compass needle decreases when the compass needle is displaced away from the wire.

Reason (R) : Strength of a magnetic field decreases as one moves away from a current carrying conductor.

Q.5. Assertion (A) : The strength of the magnetic field produced at the centre of a current carrying circular coil increases on increasing the current flowing through the coil.

Reason (R) : Magnetic field strength is inversely proportional to the current flowing in the coil.

Q.6. Assertion (A) : The strength of the magnetic field produced at the centre of a current carrying circular coil increases on increasing the radius of the circular coil.

Reason (R) : Magnetic field strength is inversely proportional to the radius of the circular coil.

Q.7. Assertion (A) : The strength of the magnetic field produced at the centre of a current carrying circular coil increases on increasing the number of turns of the circular coil.

Reason (R) : Magnetic field strength is directly proportional to the number of turns of the circular coil.

Q.8. Assertion (A) : On freely suspending a current-carrying solenoid, it comes to rest in N-S direction just like a bar magnet.

Reason (R) : One end of current carrying straight solenoid behaves as a North pole and the other end as a South pole.

Q.9. Assertion (A) : Alternating Current is used in household supply.

Reason (R) : AC electric power can be transmitted over long distances without much loss of energy.

Q.10. Assertion (A) : The strength of the magnetic field at the centre of a circular coil of a wire depends on the radius of the coil

Reason (R) : The strength of the magnetic field at the centre of a circular coil of a wire depends on the number of turns of the wire in the coil.

Q.11. Assertion (A) : A current carrying wire deflects a magnetic needle placed near it.

Reason (R) : A magnetic field exists around a current carrying wire.

Q.12. Assertion (A) : Strength of an electromagnet can be increased by increasing the number of turns per unit length in solenoid coil.

Reason (R) : Strength of an electromagnet can be increased by increasing the current flowing through the solenoid.

-x-x-x-

ANSWER KEY

Q.1 : (c)	**Q.2** : (d)	**Q.3** : (d)	**Q.4** : (a)
Q.5 : (c)	**Q.6** : (d)	**Q.7** : (a)	**Q.8** : (a)
Q.9 : (a)	**Q.10** : (b)	**Q.11** : (a)	**Q.12** : (b)