

Answer 10

(a)

- i. The sphere Q has negative charge and the sphere P has positive charge because due to repulsion, the electrons move from P to Q. These charges are developed due to electrostatic induction.
- ii. None of the sphere has any charge because electrons redistribute themselves as soon as rod A is removed and both the spheres regain their original uncharged condition.

(b) The resistance of a wire depends on the following four factors:

- i. The material of the wire - Good conductors of electricity having higher concentration of free electrons such as metals, offer less resistance.
- ii. The length of the wire - A longer wire offers more resistance (Resistance is proportional to length).
- iii. The area of cross section of the wire - A thicker wire offers less resistance (Resistance is inversely proportional to cross section.)
- iv. The temperature of the wire - The resistance of the metallic wire increases with an increase in the temperature.

(c) On heating the magnet, the molecular magnets present in the magnet start vibrating and move out of the magnetic alignment. Hence, the magnet loses its magnetism. Neutral points are the points where the magnetic field of the magnet is equal in magnitude to the earth's horizontal magnetic field, but in the opposite direction. Thus, the resultant (or net) magnetic field at the neutral points is zero.