



## Solution of Questions For Short Answer

### Chapter 38 : Electromagnetic Induction

**Ans. 1.**

As the magnetic field is non uniform thus it will induce only small electric field in different directions so there would be no net current in the loop.

**Ans. 2.**

Due to self inductance the emf produced when circuit is open the growth of current in inductor is small but when switch is closed the decay in current is faster thus emf induced is more.

**Ans. 3.**

When the ends are not connected the coil acts as inductor thus it undergoes inductance and keeps varying the current and keeps oscillating.

But when ends are connected the coil is close loop thus there is no inductance.

**Ans. 4.**

Due to movement of magnet the current is induced inside loop and thus when magnet is pushed into loops the current is increased and it starts repelling the magnet.

When magnet is taken away from the loop the current starts decreasing and thus acts in opposite direction so as to attract the magnet.

**Ans. 5.**

When there is some current in first loop it will induce same polarity current in the second loop. It starts when the current is passed through first loop and ends when the current is stopped.

Loops repel each other as loops have current in same direction thus they have same pole as magnet.

**Ans. 6.**

As the battery is disconnected the current starts decreasing in loop 1 and thus now direction of current is in opposite direction as it was earlier and it ends when both loops are in equilibrium.

**Ans. 7.**

Current on its surface changes but no magnetic field passes through it as magnetic field inside the copper box is zero.

**Ans. 8.**

As the metallic particle slide over permanent magnet they are attracted towards magnet due to formation of eddy current on the metallic body and thus they slow down and are separated from rest of material.



**Ans. 9.**

Aluminum rod while falling will experience magnetic field and thus it will induce some eddy currents in it and thus it will feel some attraction towards magnetic field and thus it will fall slow as compared to insulating material.

**Ans. 10.**

When circuit is on the bob will get induced due to magnetic field as it will get attracted towards magnets each time it will move away from its mean position and thus attracted towards mean position. thus its motion is damped more quickly.

**Ans. 11.**

When the loops have their axis at  $0^\circ$  the mutual inductance is maximum.  
And when loops have their axis at  $90^\circ$  then their inductance is minimum.

**Ans. 12.**

Self inductance depends upon length of solenoid.  
As inductance is greater at center as induction at center is due to both ends.

**Ans. 13.**

Energy density at center is greater than ends.  
So as solenoid tries to reserve its energy at center thus it opposes any change in energy.