Physics - 12th Class Physics Chapter 4 Short Questions Preparation

Q1. Name the factor upon which the self inductance depends.

Ans 1: It depends upon induced emd and time rate of change of current in the coil.It also depend upon the number of turns of the coil,its area of cross section and the core material.

Q2. What changes are required to turn the D.C motors into a D.C generators?

Ans 1:

1. In order to convert to convert DC motor into SC generator,the magnetic field must be supplied by the permanent magnet and not by electromagnet.
2. An arrangement to rotate the coil armature should be provided and battery must be removed.

Q3. What is DC motor?Write its principle.

Ans 1: AD.c motor is a device which converts D.C electrical energy into mechanical energy.The basic principle of electric motor is that a current carrying coil placed in magnetic field experiences a torque which is given by t=NIAB cos theta.

Q4. What changes are required to turn the D.C motor into D.C generators?

Ans 1:

1. In order to convert DC motor into DC generator the magnetic field must be supplied by the permanent magnet and not by electromagnet.
2. An arrangement to rotate the coil armature should be provided and battery must be removed.

Q5. Write two similarities and two difference between motor and generator.

Ans 1: Similarities:

1. Construction of a motor is similar to a generator.
2. In both,magnetic field is provided by an electromagnet.

Differences:

1. Generators convert mechanical energy into electrical energy while motor converts electrical energy into mechanical energy.
2. In generator,the armature coil is rotated in the magnetic field and the current is the output.While in motor,armature is connected to battery,which rotated the armature.

Q6. What is mean by commutator in D.C generator?

Ans 1: Commutator consists of two split rings or two halves of a single ring.Each half of split ring is connected to each end of the rotating coil,It helps to maintain the output in the same direction by inverting lower halves if sine curve.

Q7. What is back emf in motors?

Ans 1: When to coil motor rotates across the magnetic field by the applied potential difference V,an emf is induced in it.The induced emf is in such a direction that opposes the emf running motor.Due to this reasons,the induced emf is called back emf of the motor.The magnitude of the back emf increase with the speed of motor.

Q8. State the Lenz's law and define Henry.

Ans 1: Lenz's Law: It states that the direction of induced current is always so as to opposite the change which cause the current. Henry: If the current in the primary is changing at the rate of one ampere per second and the emf induced across the ends of the secondary coil is one volt then the mutual inductance is called one henry.

Q9. Define the SI unit of mutual inductance.

Ans 1: If current is changing at the rate of one ampere per second and the emf induced across the ends of the coil is one volt then inductance is called one Henry.Its SI units are VsA^{-1}.

Q10. Can an electron at rest be set in motion with magnet?Explain

Ans 1: No an electron at rest can not be set in motion with a magnet because at rest electrons only have electric field which can not interfere with magnetic field to cause any force which can produce motion in electrons.
