Physics - 12th Class Physics Chapter 4 Short Questions Preparation

Q1. Can an electric motor be used to derive and electric generator with output from the generator being used to operate the motor?

Ans 1: No,it is not possible.Because if it possible,it will be a self operating system without getting energy from some external source and this is against the law of conservation of energy.

Q2. 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.

Q3. Does the induced current depend on the resistance of the circuit?

Ans 1: Yes the induced current depend upon the resistance of the circuit.
By ohm's law
I=e/R
Thus the induced current depends on the resistance of the circuit.

Q4. Write down any one method used for the production of induced emf.

Ans 1: Induced emf can be induced by electromagnetic induction.When a conductor is moved through a magnetic field the electric current flow through the circuit,The emf produced in the conductor is called induced emf and the current generated is called induced current.

Q5. 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.

Q6. Is it possible to change both the area of the loop and magnetic field passing through the loop and still have bo induced emf in the loop?Explain briefly.

Ans 1: Yes,it the plane of the loop is kept parallel to the direction of the magnetic field magnetic flux through the coil will be zero,no emf will induced in the loop either by changing its area or by changing the magnetic field.

Q7. What happen to the current of a circuit if a load resistance of the circuit is much less than the power transferred?

Ans 1: The greater the load the larger the current is supplied by the generator,When the load resistance of the circuit is much less,small current is supplied by the generator.

Q8. How does Lenz's law explain law of conservation of energy phenomena of electromagnetism induction?

Ans 1: When a rod is moving in the magnetic field towards right,an induced current flows through the loop in anticlockwise direction,Since current carrying rod experience a magnetic force opposite to that velociety.An external force equal in magnitude and opposite in direction must be applied to keep the rod moving with constant velocity.This dragging force provides the energy for the induced current to flow,This energy is the source of induced current.Thus electromagnetic induction is exactly according to law of conservation of energy.

Q9. Does the induced emf always act to decrease the magnetic flux through a circuit?

Ans 1: No.the induced emf always oppose the cause that produce it.If the magnetic flux through the circuit is increasing then induced emf acts to decrease the magnetic flux.
it the magnetic flux through the circuit is decreasing,then induced emf acts to increase the magnetic flux.

Q10. 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.