Physics - ICS Part 2 Physics Chapter 15 Short Questions Preparation

Q1. 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.

Q2. In a transformer there is no transfer of charge from the primary to the secondary.How is then the power transferred?

Ans 1: The power will be transferred because the two coils of transformer are magnetically linked i.e, the change of flux through one coil is linked with the other coil.

Q3. State Faraday's law of electromagnetic induction.

Ans 1: It states that
"The average emf induced in a conducting coil of N loops is equal to the negative of the rate at which the magnetic flux through the coil is changing with time".

Q4. Define induced emf and induced current.

Ans 1: If a conductor moves through a magnetic field then due to change in magnetic flux,an emf is induced across the ends of the conductor which is known as back emf.If the circuit is close it will cause an electric current which is called as induced current.

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 the working principle of transformer?Explain

Ans 1: The transformer work on the principle of mutual induction between two coils.The transformer consists of two coils of copper electrically insulated from each other,wound on the same iron core,The coil to which AC power is supplied is called primary and that from which power is delivered to the circuit is called secondary.

Q7. What is back motor effect in generators?

Ans 1: Back motor effect is the opposing torque produced due to the induced emf in the coil.When coil rotated a current is drawn through the coil.The magnetic field exerts two equal and opposite forces on left and right side of the current carrying coil,These forces are such that they produce a counter torque that oppose the rotational motion of the coil.This effect is known as back motor effect in generators.

Q8. 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.

Q9. What is electromagnet?Mention two practical example of electromagnet.

Ans 1: When a specimen of iron is placed inside a current carrying solenoid,it becomes and electromagnet.Examples are

1. Transformers
2. Motors

Q10. 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.