Physics - ICS Part 2 Physics Chapter 15 Short Questions Preparation

Q1. A suspended magnet is oscillating freely in the horizontal plane.The oscillation are strongly damped when a metal plate is placed under,The magnet.Explain why its occurs.

Ans 1: The oscillating magnet produces change of magnetic flux close to it.The metal plate placed below it experiences the change the magnetic flux,As the result eddy currents are produced inside the metal.According to Lenz's law these eddy currents oppose the cause which produce it,So the oscillation of magnet are strongly damped.

Q2. 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.

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. 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}.

Q5. When the primary of a transformer is connected to A.C mains,the current it is very small if the secondary circuit is open.Explain.

Ans 1: If the secondary circuit is open then output power will be zero,Because output power is always slightly smaller than the input power,therefore a very small value of current is being drawn by a primary coil of transformer from AC units,

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Q6. 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".

Q7. 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.

Q8. 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.

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. Define mutual induction.

Ans 1: The phenomena in which the changing current in one coil induces an emd in another coil is called the mutual induction.