Quality Checkers Only way to fulfill your dreams	12th Science : Physics Electromagnetic induction,	**DATE:** **TIME: 1 hr** **MARKS: 25**
	SEAT NO:	

Note:-

1. All Questions are compulsory.
2. Numbers on the right indicate full marks.

Section A

Q.1 Select and Write the correct answer. **(4)**

1. If N are the number of turns in a coil, the value of self inductance varies as

   A) N^o B) N^1

   C) N^2 D) N^{-2}

2. A transformer is used for converting

   A) A.C. into D.C. B) D.C. into A.C.

   C) A.C. into D.C. of some optimum value D) none of these

3. A wire of length 2.5 km and resistance 35Ω has fallen from a height of 10 m in earth's horizontal field of 2×10^{-5} T. The current through the coil is

   A) 2 A B) 0.2 A

   C) 0.02 A D) 0.002A

4. An emf of 20 mV is induced in a solenoid by a rate of change of current 4 A/S. The self inductance of the solenoid is

   A) 3 mH B) 4 mH

   C) 5 mH D) 6 mH

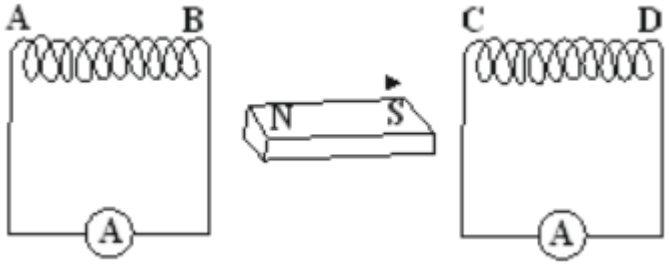
Q.2 Answer the following. **(3)**

1. Define : Parallel combination of inductors
2. What is the force experienced by a moving charge in a magnetic field?
3. A coil is wound on an iron core and looped back on itself so that the core has two sets of closely wound wires in series carrying current in the opposite senses. What do you expect abouts its self inductance? Will it be large or small ?

Section B
Attempt any Four

Q.3 Explain what will happen if back emf of DC motor vanishes? **(2)**

Q.4 A magnet is moved in the direction indicate by an arrow between two coils AB and CD as shown in figure. Suggest the direction of current in each coil. **(2)**



Q.5 Mention the relation between S.I. unit and C.G.S. units of emf and magnetic flux. **(2)**

Q.6 Why the current passing through a motor is larger in the beginning than when the motor is running at full speed? **(2)**

Q.7 What is the flux of a vector field through a given area? **(2)**

Q.8 An emf of 96.0 mV is induced in the windings of a coil when the current in a nearby coil is increasing at the rate of 1.20 A/s. What is the mutual inductance (M) of the two coils? **(2)**

Section C
Attempt any Two

Q.9 What do you mean by electromagnetic induction? State the Faraday's laws of electromagnetic induction. **(3)**

Q.10 Distinguish between Step up transformer and step down transformer. **(3)**

Q.11 The radius of a coil is changing at the rate of 10^{-2} units in a normal magnetic field of 10^{-3} units and the induced emf is 1 uv. Find the final radius of the coil **(3)**

Section D
Attempt any One

Q.12 Mention the factors which affects the mutual inductance between two coils. **(4)**

A horizontal wire 20 m long extending from east to west is falling with a velocity of 10 m/s normal to the Earth's magnetic field of 0.5×10^{-4} T. What is the value of induced emf in the wire?

Q.13 Explain various applications of eddy currents. **(4)**