

## Exercise MCQs

1. Which statement is true about the magnetic poles?

- (A) unlike poles repel                      (B) magnetic poles do not effect each other  
(C) like poles attract                      (D) a single magnetic pole does not exist

2. What is the direction of the magnetic field lines inside a bar magnet?

- (A) from north pole to south pole                      (B) from south pole to north pole  
(C) from side to side                      (D) there are no magnetic field lines

3. The presence of a magnetic field can be detected by a:

- (A) small mass                      (B) stationary positive charge  
(C) stationary negative charge                      (D) magnetic compass

4. If the current in a wire which is placed perpendicular to a magnetic field increases, the force on the wire:

- (A) increases                      (B) decreases  
(C) remains the same                      (D) will be zero

5. A D.C motor converts:

- (A) mechanical energy into electrical energy                      (B) mechanical energy into chemical energy  
(C) electrical energy into mechanical energy                      (D) electrical energy into chemical energy

6. Which part of a D.C motor reverses the direction of current through the coil every half-cycle?

- (A) the armature                      (B) the commutator  
(C) the brushes                      (D) the slip rings

7. The direction of induced e.m.f. in a circuit is in accordance with the conservation of:

- (A) mass                      (B) charge  
(C) momentum                      (D) energy

8. The step-up transformer:

- (A) increases the input current                      (B) increases the input voltage  
(C) has more turns in the primary                      (D) has less turns in the secondary coil

9. The turn ratios of a transformer is 10. It means:

- (A)  $I_s = 10 I_p$                       (B)  $N_s = N_p / 10$   
(C)  $N_s = 10 N_p$                       (D)  $V_s = V_p / 10$

**Answers:**

1	(D)	6	(B)
2	(B)	7	(D)
3	(D)	8	(B)
4	(A)	9	(C)
5	(C)		



**Short Questions**

**Q1: What is meant by the intensity of the magnetic field?**

**Ans:** The number of magnetic lines of force passing through any surface.

**Q2: State and explain the Right Hand Grip Rule.**

**Ans:** A simple method of finding the direction of the magnetic field around the conductor is the Right Hand Grip Rule. "Grasp a wire with your right hand such that your thumb pointed in the direction of the current. Then curling fingers of hand will point in the direction of the magnetic field".

**Q3: Define the principle of A.C generator.**

**Ans:** When a coil rotates in a magnetic field, the induced current in it continuously changes from maximum to minimum value and from minimum to maximum value, and soon. This is the basic principle on which an A.C generator works.

**Q4: Under what conditions the magnetic flux will be minimum and maximum?**

**Ans:** Magnetic flux is maximum when magnetic field lines are perpendicular to the area. Similarly, magnetic flux is minimum when magnetic field lines are parallel to the area.

**Q5: Write the use of relay.**

**Ans:** The relay is used to control a large current with the help of a small current.

**Q6: What is an Electric Motor?**

**Ans:** "That device which converts electric energy into rotational kinetic energy".

**Q7: Define electromagnet.**

**Ans:** The type of temporary magnet, which is created when current flows through a coil is called an electromagnet.

**Q8: Write two factors affecting induced E.M.F.**

**Ans:** The magnitude of induced e.m.f in a circuit depends on the following factors:

- Speed of relative motion of the coil and the magnet.
- Number of turns of the coil.

**Q9: State Lenz's law?**

**Ans:** The direction of an induced current in a circuit is always such that it opposes the cause that produces it.

**Q10: What do you understand by the term Mutual Induction?**

**Ans:** "The phenomenon of production of induced current in one coil due to a change of current in a neighboring coil is called Mutual Induction".

**Q11: What is Transformer?**

**Ans:** "The transformer is a practical application of mutual induction".



**Additional Short Questions**

**Q12: Define electromagnetism.**

**Ans:** Electromagnetism is the study of the magnetic effects of current.

**Q13: What is meant by solenoid?**

**Ans:** A coil of wire consisting of many loops is called a solenoid.

**Q14: Which device is used for converting electrical energy into mechanical energy?**

**Ans:** An electric motor is used to convert electrical energy into mechanical energy.

**Q15: Describe Fleming's left hand rule?**

**Ans:** Stretch the thumb, forefinger, and middle finger of the left hand mutually perpendicular to each other. If the forefinger points in the direction of the magnetic field, the middle finger in the direction of the current, then the thumb would indicate the direction of the force acting on the conductor.

**Q16: What is the difference between a generator and a motor?**

**Ans:** The primary difference between a motor and a generator is that a motor converts electrical energy into mechanical energy and a generator converts mechanical energy into electrical energy.

**Q17: Define electromagnetic induction.**

**Ans:** The process of generating an induced current in a circuit by changing the number of magnetic lines of force passing through it is called electromagnetic induction.

**Q18: Can a transformer operate on direct current?**

**Ans:** No, a transformer cannot operate on direct current because direct current gives constant magnetic flux.

**Q19: How many coils are used in a transformer?**

**Ans:** There are two coils in the transformer. One is a primary coil and the other is the secondary coil.

**Q20: Define step up transformer.**

**Ans:** If the secondary voltage  $V_s$  is larger than the primary voltage  $V_p$ , the transformer is called a step-up transformer.

**Q21: Define step-down transformer.**

**Ans:** If the secondary voltage  $V_s$  is smaller than the primary voltage  $V_p$ , the transformer is called a step-down transformer.

**Q22: Define armature.**

**Ans:** In a practical electric motor the coil, called the armature. It is made of many loops mounted on a shaft or axle.

**Q23: Define the ideal transformer.**

**Ans:** In an ideal transformer, the electric power delivered to the secondary circuit is equal to the power supplied to the primary circuit.

**Q24: Write two ways to increase the magnetic force.**

**Ans:** Two ways to increase the magnetic force are:

- The current in the wire is increased.
- The strength of the magnetic field is increased.

**Q25: How the direction of magnetic field lines is determined in current carrying straight wire?**



**Ans:** The direction of the magnetic field is governed by the direction of the current flowing through the conductor.

**Q26: What is the function of split rings in the D.C motor?**

**Ans:** To reverse the direction of current, the connection to the coil is made through an arrangement of brushes and a ring that is split into two halves called a split ring commutator.

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