

# RIZWAN ACADEMY – KASUR

Paper: Physics

Chapter (14 – 15)

Class: F.Sc. Part – II

## ELECTROMAGNETISM + ELECTROMAGNETIC INDUCTION

Name: \_\_\_\_\_ Roll No: (in words) \_\_\_\_\_

### OBJECTIVE TYPE

Total Marks: 12

Paper Code: \_\_\_\_\_

Total Time: 10 Minutes

**NOTE:** Write your Roll No. in space provided. Using lead pencil will result in loss of marks.

**Q.No.1:** You have four choices for each objective type question as A,B,C and D. The choice which you think is correct; fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

Sr. No.	QUESTION	A	B	C	D
1.	If a current is passing through a wire, the magnet lines of force are	Parallel to the wire	Perpendicular to the wire	Inclined to the wire	Concentric circles
2.	Two free parallel straight wires carrying currents in the opposite direction	Do not affect each other	Attract each other	Repel each other	Get rotated
3.	A $0.50T$ field over an area of $2m^2$ which lies at angle of $60^\circ$ to the field, then the magnetic flux is	$0.50Wb$	$0.75Wb$	$2.0Wb$	$4.0Wb$
4.	The ratio $(\frac{e}{m})$ of a electron	Is equal to that of an proton	Is greater than that of an proton	Is smaller than that of an proton	May be smaller or greater
5.	When a charged particle is projected perpendicular to uniform magnetic field, its trajectory (path) is	A helix	Ellipse	Straight line	A circle
6.	The galvanometer can be made sensitive by making the factor $(\frac{c}{BNA})$	Large	Small	Zero	Constant
7.	Door bell requires a voltage of	3V	6V	9V	12V
8.	If conductor is stationary in a magnetic field, then its motional $emf$ will be	Zero	$vBL$	$qvB$	$IBL$
9.	The induction heater operates on the principle of	Electrostatic induction	Electrostatic conduction	Electromagnetic radiation	Electromagnetic induction
10.	Electromagnetic induction is exactly according to the law of conservation of	Charge	Energy	Momentum	Mass
11.	Energy stored per unit volume inside a solenoid is called	Charge density	Volume charge density	Surface charge density	Energy density
12.	Transformer obeys the law of conservation of	Momentum	Power	Charge	Mass

### SUBJECTIVE TYPE

Total Marks: 18

Time Allowed: 0 Hours 40 Minutes

#### SECTION – I (SHORT QUESTIONS)

2. Attempt any FIVE questions. (5 × 2 = 10) Marks

- i. At a given instant, a proton moves in the positive X – direction in a region where there is magnetic field in the negative Z – direction. What is the direction of the magnetic force? Will the proton continue to move in the positive X – direction? Explain?
- ii. A loop of wire is suspended between the poles of a magnet with its plane parallel to the pole faces. What happens if a direct current is put through the coil? What happens if an alternating current is used instead?
- iii. Why the resistance of ammeter should be very small?
- iv. Is it possible to change both the area of the loop and the magnetic field passing through the loop and still not have an induced  $emf$  in the loop?
- v. In a certain region the earth's magnetic field point vertically down. When a plane flies due north, which wingtip is positively charged?
- vi. A square loop of wire is moving through a uniform magnetic field. The normal to loop is oriented parallel to the magnetic field. Is  $emf$  induced in the loop? Give a reason for your answer?
- vii. A suspended magnet is oscillating freely in a horizontal plane. The oscillations are strongly damped when a metal plate is placed under the magnet. Explain why this occurs?

#### SECTION – II (ESSAY TYPE) Attempt given question

3. Do as directed...

- i. Determine charge – to – mass ratio  $(\frac{e}{m})$  of electron. (5)
- ii. A circular coil has 15 turns of radius  $2cm$  each. The plane of the coil is inclined at  $40^\circ$  to a uniform magnetic field of  $0.2T$ . If the field is increased to  $0.5T$  in  $0.2s$ , find the magnitude of the induced EMF. (3)

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### SECTION – III (Practical)

4. (a) Write answer of TWO questions. (2×2=4)
- i. a
  - ii. c
  - iii. v
  - iv. b
4. (b) Write procedure to determine the resistance of voltmeter by graph method. (3)
- (OR)**
- Write procedure to find the unknown high resistance by using neon flash lamp. (3)
4. (c) Answer the following questions on the basis of graph drawn between potential difference (V) and charge (Q). (4)
- i. What you conclude from the graph?
  - ii. Find the capacitance of capacitor from the graph.

Good Luck

Ch. Khalid Mahmood Ashraf