

# Magnetic Effects of Electric Current

## Quick Study Guide

# HOW TO USE THIS GUIDE

HIGHLIGHTED TEXT SHOWS IMPORTANT POINTS

- ★ MARKS HIGH-FOCUS TOPICS
- 📄 INDICATES EXAM TIPS
- ⚠️ SHOWS COMMON ERRORS
- 💡 GIVES QUICK TIPS

## MAGNETIC FIELD

Mnemonic: "COMPASS GAME"

- |   |                    |   |                      |
|---|--------------------|---|----------------------|
| C | Current flowing    | G | Grip rule use        |
| O | Oersted found it   | A | Apply right hand     |
| M | Magnetic lines     | M | Magnetic field lines |
| P | Pattern circular   | E | Easy to remember     |
| A | Around wire        |   |                      |
| S | Straight conductor |   |                      |
| S | Shows direction    |   |                      |

Remember As:

CURRENT KA CHAKKAR

- Like chai stirring:
- \* Current = Spoon movement
- \* Field = Chai movement
- \* Direction = Stirring direction

Common Errors:

- Wrong field direction
- Incorrect rule application
- Missing field lines
- Direction confusion

## RIGHT-HAND RULES

Mnemonic: "THUMB RULE"

- |   |                     |   |                 |
|---|---------------------|---|-----------------|
| T | Thumb shows current | R | Right hand only |
| H | Hold wire straight  | U | Understand flow |
| U | Use right hand      | L | Lines of force  |
| M | Magnetic field      | E | Encircle wire   |
| B | Bend fingers        |   |                 |

Maxwell's Cork Rule:

SCREW DRIVER

- \*S\*: Screw direction
- \*C\*: Current direction
- \*R\*: Rotate right
- \*E\*: Easy method
- \*W\*: Wire straight
- \*D\*: Direction check
- \*R\*: Right hand use
- \*I\*: Inside out
- \*V\*: Verify field
- \*E\*: Easy recall
- \*R\*: Remember direction

## SOLENOID & ELECTROMAGNET

Mnemonic: "COIL MASTER"

- |   |                  |   |                     |
|---|------------------|---|---------------------|
| C | Coil of wire     | M | More turns = Strong |
| O | Organize turns   | A | Arrange properly    |
| I | Iron core inside | S | Strengthen field    |
| L | Lines magnetic   | T | Temporary magnet    |
|   |                  | E | Electricity needed  |
|   |                  | R | Remember poles      |

Field Pattern:

MAGNET BABA

- \*M\*: Middle strongest
- \*A\*: Axis aligned
- \*G\*: Gap between turns
- \*N\*: North-South poles
- \*E\*: End to end
- \*T\*: Through center
- \*B\*: Both poles clear
- \*A\*: Axis important
- \*B\*: Better with iron
- \*A\*: Align properly

## FLEMING'S RULES

Mnemonic: "LEFT DANCE"

- |   |                      |   |                          |
|---|----------------------|---|--------------------------|
| L | Left hand use        | D | Direction of current     |
| E | Easy to remember     | A | Arrange fingers          |
| F | First finger (Field) | N | Ninety degrees           |
| T | Thumb (Motion)       | C | Current second finger    |
|   |                      | E | Everything perpendicular |

(Right Hand Rule)

RIGHT SHOW

- \*R\*: Right hand use
- \*I\*: Input current
- \*G\*: Generator rule
- \*H\*: Hold properly
- \*T\*: Thumb motion
- \*S\*: Second finger field
- \*H\*: Help in dynamo
- \*O\*: Observe direction
- \*W\*: Work principle

## ELECTRIC MOTOR

Mnemonic: "MOTOR KING"

- |   |                     |   |                       |
|---|---------------------|---|-----------------------|
| M | Moving coi          | K | Keep rotating         |
| O | Opposite poles      | I | Inside magnetic field |
| T | Torque produces     | N | North-South poles     |
| O | Opposite current    | G | Generate motion       |
| R | Rotation continuous |   |                       |

Working Parts:

SPLIT GAME

- \*S\*: Split ring
- \*P\*: Permanent magnet
- \*L\*: Loop of wire
- \*I\*: Inside field
- \*T\*: Torque action
- \*G\*: Good brushes
- \*A\*: Armature turns
- \*M\*: Magnetic field
- \*E\*: Energy converts

## AC GENERATOR

Mnemonic: "BIJLI BOSS"

- |   |                 |   |                   |
|---|-----------------|---|-------------------|
| B | Brushes use     | B | Both ways current |
| I | Induced current | O | Oscillating       |
| J | Just rotating   | S | Slip rings        |
| L | Loop in field   | S | Source of AC      |
| I | Into AC current |   |                   |

Remember As

ROTATE KARO

- \*R\*: Rotating loop
- \*O\*: Opposite poles
- \*T\*: Turn armature
- \*A\*: Alternating EMF
- \*T\*: Through rings
- \*E\*: EMF induced
- \*K\*: Keep turning
- \*A\*: Alternating current
- \*R\*: Rings collect
- \*O\*: Output AC



## DOMESTIC CIRCUIT

Mnemonic: "GHAR KA CURRENT"

G Green = Earth  
H Hot wire (Live)  
A Ampere rating  
R Red = Live

C Circuit breaker  
U Use proper wire  
R Red is danger  
R Rating check  
E Earth important  
N Neutral wire  
T Three wires

### Color Code:

#### WIRE TEEN

- Red/Brown = Live
- Black/Blue = Neutral
- Green = Earth

## QUICK REVISION CHECKLIST

Before Exam:

- ✓ Magnetic field concepts
- ✓ Right-hand rules
- ✓ Fleming's rules
- ✓ Motor principle
- ✓ Generator working
- ✓ Domestic wiring
- ✓ Safety rules

Scoring Tips:

1. Draw neat diagrams
2. Show field lines
3. Mark directions
4. Write proper rules
5. Give applications

100%

HIGH FOCUS AREAS

1. Magnetic Field (5 marks)
2. Fleming's Rules (5 marks)
3. Right Hand Rule (5 marks)
4. Electric Motor (4 marks)
5. Generator (4 marks)

