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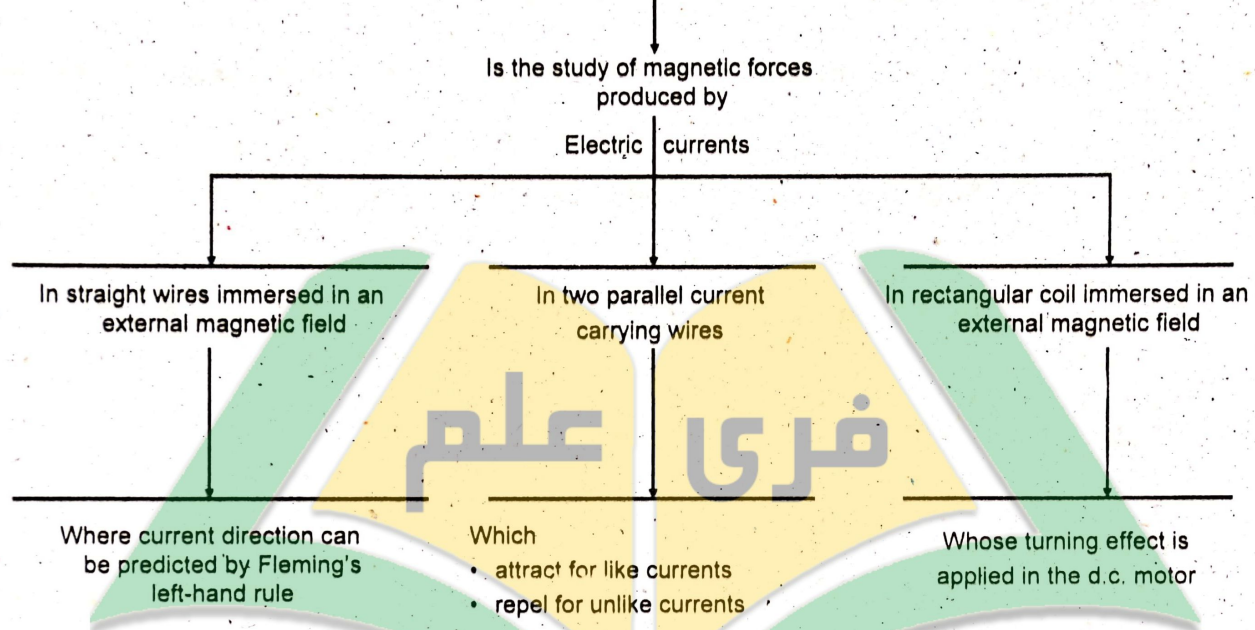
# CHAPTER

# 15

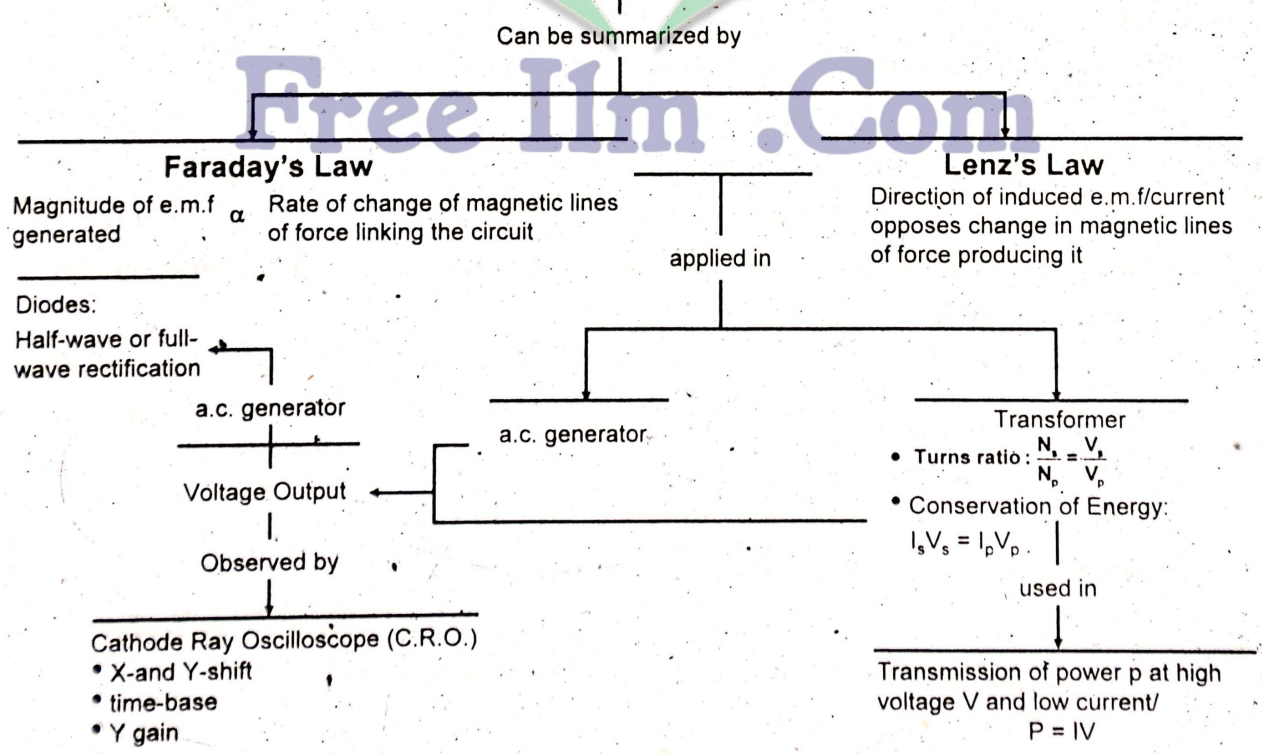
## ELECTROMAGNETISM

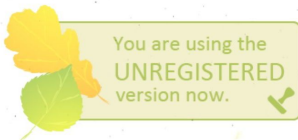
### CONCEPT MAP

#### ELECTROMAGNETISM



#### ELECTROMAGNETIC INDUCTION

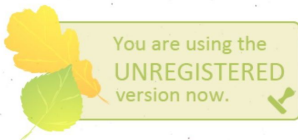




## MULTIPLE CHOICE QUESTIONS

### 15.1 and 15.2 Magnetic Effects of a Steady Current and Force on a Current – Carrying Conductor Placed in Magnetic Field

- \_\_\_\_\_ is a study of magnetic effects of current  
 (a) Electrostatics (b) Electricity (c) Electromagnetism (d) Electronics
- Who discovered that when current passes through a conductor it produces a magnetic field around it  
 (a) Lenz (b) Coulomb (c) Ampere (d) Faraday
- When current passes through straight conductor it produce magnetic field in the form of  
 (a) Straight line (b) Concentric circles (c) Rectangular form. (d) Parabolic shape
- The magnetic field produced in straight current carrying conductor is stronger  
 (a) Near pole (b) Near current carrying conductor  
 (c) Away from current carrying conductor (d) None of these
- The magnetic field produced in straight current carrying conductor is weaker  
 (a) Near pole (b) Near current carrying conductor  
 (c) Away from current carrying conductor (d) None of these
- Weak ionic current that travel along the nerve can produce the \_\_\_\_\_  
 (a) Electric effect (b) Magnetic effect  
 (c) Electric and Magnetic field (d) All of these
- MRI stands for  
 (a) Magnetic resonance imagining (b) Magnetic resistance and current  
 (c) Magnetic resistance imaginary (d) None of these
- The magnetic lines of Force can be traced on cardboard by using:  
 (a) Cardboard (b) Compass Needle (c) Paper (d) Magnet
- Shape of Magnetic lines of force in straight Conductor are:  
 (a) Straight (b) Elliptical (c) Circular (d) All of them
- Direction of Magnetic lines of force in straight conductor is found by:  
 (a) Right hand rule (b) Left hand rule (c) Both a & b (d) None of them
- If the current is flowing from bottom end to top then the direction of magnetic lines of force will be:  
 (a) Anti-Clockwise (b) Clockwise (c) Straight (d) None of them
- If the current is flowing from top to bottom then the direction of magnetic lines of force will be:  
 (a) Anti-Clockwise (b) Clockwise (c) Straight (d) None of them
- A dot(•) on paper indicates that the current is directed:  
 (a) Out of Plane (b) Towards us (c) Into the Plane (d) Bath a & b
- A Cross(x) on paper indicates that the current is directed:  
 (a) Out of plane (b) Away from us (c) Into the Plane (d) Both b & c



15. **Magnetic field in most part of the coil is:**  
 (a) Circular (b) Straight (c) Uniform (d) Non-Uniform
16. **A closely wound cylindrical coil of insulated wire is:**  
 (a) Cylindrical coil (b) Solenoid (c) Cable (d) All of them
17. **Magnetic lines of force in solenoid are:**  
 (a) Circular (b) Parallel (c) Non-Uniform (d) Uniform
18. **Lines of force in solenoid resemble the pattern of lines of force due to:**  
 (a) Electromagnet (b) Horse shoe magnet (c) Bar magnet (d) All of them
19. **The polarity of current carrying solenoid is found by:**  
 (a) Right Hand Rule (b) Left Hand Rule (c) Both a & b (d) None of them
20. **Hold down the end of the current carrying solenoid in front of you, if the direction of current flow through this end is anti-clock wise it would be:**  
 (a) North Pole (b) South Pole (c) any of them (d) None of them
21. **Hold down the end of the current carrying solenoid in front of you, if the direction of current flow through this end is clockwise it would be:**  
 (a) North Pole (b) South Pole (c) Any of them (d) None of them

**15.3 and 15.4 Turning effect on current carrying coil in magnetic field and D.C motor**

22. **Force on current carrying conductor in a magnetic field is found by:**  
 (a) Right Hand Rule (b) Left Hand Rule (c) Both a & b (d) None of them
23. **A device which is used to convert electrical energy into mechanical energy:**  
 (a) Transformer (b) A.C Generator (c) D.C Motor (d) All of them

**15.5, 15.6 and 15.7 Electromagnetic Induction, Direction of induced e.m.f – Lenz's Law and A.C generator**

24. **Electromagnetic induction was discovered by:**  
 (a) Newton (b) Galileo (c) Einstein (d) Faraday
25. **Who found the direction of induced e.m.f first time?**  
 (a) Faraday (b) Lenz (c) Henry (d) Bohr
26. **The value of induced emf is directly proportional to the rate of change of:**  
 (a) Current (b) Resistance (c) Potential (d) Flux
27. **The number of magnetic lines of force passing through any surface:**  
 (a) emf (b) Current (c) Flux (d) Resistance
28. **The magnitude of induced emf depends upon the speed of:**  
 (a) Magnet (b) Coil (c) Current (d) relative Motion
29. **A device used to convert mechanical energy into electrical energy:**  
 (a) Transformer (b) A.C Generator (c) D.C Motor (d) All of them
30. **A generator works on the principle of:**  
 (a) Electromagnetic induction (b) Electrostatic induction  
 (c) Both of them (d) None of these

### 15.8 and 15.9 Mutual induction and Transformer

31. If the Current is induced in a circuit due to change of current in an other circuit, this process is known as:
- (a) electrostatic induction (b) mutual induction  
(c) self induction (d) none of them
32. The coil of transformer in which change in current produces induced current in another coil is known as:
- (a) Primary (b) Secondary (c) Solenoid (d) All of them
33. A coil in which current is induced is known as:
- (a) Primary (b) Secondary (c) Solenoid (d) All of them
34. If the current through a coil or a circuit changes and this change induces an emf in the circuit itself, this process is known as:
- (a) electrostatic induction (b) mutual induction (c) self induction (d) none of them
35. An electrical device which is used to increase or decrease the value of alternating voltage:
- (a) Transformer (b) A.C Generator (c) D.C Motor (d) All of them
36. The coil which is connected to the alternating voltage whose value is to be altered is known as:
- (a) Primary Coil (b) Secondary Coil (c) Solenoid (d) All of them
37. The Coil of transformer in which alternating voltage is induced is known as:
- (a) Primary Coil (b) Secondary Coil (c) Solenoid (d) All of them
38. Transformer works on the principle of:
- (a) Electrostatic induction (b) Mutual Induction  
(c) Self Induction (d) All of them
39. Type of transformer which is used to increase the value of alternating voltage:
- (a) step up (b) step down (c) step forward (d) step back
40. Type of transformer which is used to decrease the value of alternating voltage:
- (a) step up (b) step down (c) step forward (d) step back
41. When a straight current carrying conductor is placed in a magnetic field at right angle to it, the direction of force acting on conductor is:
- (a) Same as the direction of field (b) Opposite to the direction of the field  
(c) Makes an angle of  $45^\circ$  with the current (d) At right angle to both the field and current
42. A transformer has 100 turns in primary and 500 turns in the secondary. If 6 Volts D.C is applied across its primary, the voltage induced across its secondary would be:
- (a) 0V (b) 30V (c) 45V (d) 60V
43. Walk through metal detector are installed at airport and other places for
- (a) Security purpose (b) Decoration (c) Useless purpose (d) All of these



44. A practical application of mutual induction is:  
 (a) Transformer (b) Electrical motor (c) Generator (d) Diode
45. Number of turns on the primary coil is represented as:  
 (a)  $N_s$  (b)  $N_p$  (c)  $N_s$  (d)  $N_u$
46. Number of turns on secondary coil is  
 (a)  $N_s$  (b)  $N_d$  (c)  $N_u$  (d)  $N_p$
47. In step-up transformer:  
 (a)  $V_s > N_s$  (b)  $U_p > V_p$  (c)  $V_s > V_p$  (d)  $V_s > N_s$
48. Transformer is called step-down when:  
 (a)  $V_s > V_p$  (b)  $V_s > N_s$  (c)  $V_p < V_s$  (d)  $V_s < V_p$
49. Electric power is usually generated at places which are far from the places where it is:  
 (a) Consumed (b) Produced (c) Not needed (d) Developed
50. Voltage of current supplied to consumers is:  
 (a) 230 V (b) 240 V (c) 210 V (d) 220 V
51. Electromagnet is used in device  
 (a) Electric bell (b) Relay (c) Both A and B (d) Thermometer
52. Which is an electric switch that opens and closes under the control of another electrical circuit  
 (a) Relay (b) electric bell (c) electric circuit (d) A.C Generator

**ANSWER KEY**

Q.	Ans	Q.	Ans	Q.	Ans	Q.	Ans	Q.	Ans	Q.	Ans
1	c	11	a	21	b	31	b	41	d	51	c
2	c	12	b	22	b	32	a	42	a	52	a
3	b	13	a	23	c	33	b	43	a		
4	b	14	c	24	d	34	c	44	a		
5	c	15	a	25	b	35	a	45	b		
6	b	16	b	26	d	36	a	46	a		
7	a	17	b	27	c	37	b	47	c		
8	b	18	c	28	d	38	b	48	d		
9	c	19	a	29	c	39	a	49	a		
10	a	20	a	30	a	40	b	50	d		