



# ELECTROMAGNETISM

**Each question has four possible answers, tick (☑) the correct answer:**

- The name of the scientist who noted that a compass needle was deflected when placed near the current carrying conductor:
  - Henry
  - Faraday
  - Coloumb
  - Oersted
- The sources of magnetic field are:
  - Charges in the motion
  - Charges at rest
  - Both (a) and (b)
  - None of above
- A current carrying conductor placed in a magnetic field parallel to it. The force experienced by the conductor is:
  - $F = 0$
  - $F = BIL$
  - $F = BIL \sin \theta$
  - $F = BIL \cos \theta$
- Who discovered a relation between magnetic and electric field:
  - Lenz
  - Faraday
  - Orested
  - None of above
- A changing magnetic field produces:
  - Electric current
  - Electric field
  - Magnetic field
  - None of above
- The direction of magnetic lines of force are depend upon:
  - Direction of current
  - Quantity of current
  - Both (a) and (b)
  - None of the above
- The force acting on one metre length of the conductor placed at right angle to the magnetic field is called:
  - Magnetic field
  - Magnetic induction
  - Force
  - None of the above
- The dot product of magnetic field  $B$  and vector area  $A$  is:
  - Magnetic flux
  - Magnetic induction
  - Faraday's law
  - Electric flux

9. Mathematically the magnetic flux is:
- (a)  $\phi = BA \sin\theta$  (b)  $\phi = B^2 A$   
(c)  $\phi = \vec{B} \cdot \vec{A}$  (d)  $\phi = B \cdot A^2$
10. Tesla is the unit for measuring:
- (a) Magnetic intensity (b) Magnetic induction  
(c) Magnetic force (d) None of the above
11. Weber is the unit of:
- (a) Magnetic flux (b) Permeability  
(c) Magnetic force (d) None of above
12. Weber has the dimensions of:
- (a) volt/sec (b) volt<sup>2</sup>/sec  
(c) volt/sec<sup>2</sup> (d) sec/volt
13. The dimensions of magnetic flux are:
- (a)  $M^1L^{-2}T^1A^1$  (b)  $MLT^{-2}A^{-1}$   
(c)  $ML^2T^2A^{-1}$  (d)  $ML^2T^{-2}A^{-1}$
14.  $\mu_0$  is the permeability of free space, its value is:
- (a)  $4\pi \times 10^{-7} \text{ Wb Am}$  (b)  $4\pi \times 10^{-7} \text{ Wb}^{-1} \text{ m}^{-1}$   
(c)  $4\pi \times 10^{-5} \text{ Wb A}^{-1} \text{ m}^{-1}$  (d)  $4\pi \times 10^{-7} \text{ Wb A}^{-1} \text{ m}^{-1}$
15. When the angle between the vector area and the magnetic field is  $0^\circ$  then magnetic flux is:
- (a) Half (b) Minimum  
(c) Maximum (d) Double
16. When some compass needles are placed on a cardboard along a circle with the center at the wire, they will:
- (a) Set themselves tangential to the circle (b) Points in the direction of N-S  
(c) Points in the direction of E.W (d) None of these
17. In the region surrounding a current carrying wire:
- (a) A magnetic field is setup (b) The lines of force are elliptical  
(c) Both (a) and (b) (d) None of these
18. Magnetic force acting on unit positive charge moving perpendicular to the magnetic field with a unit velocity is known as:
- (a) Magnetic induction (b) Magnetic flux  
(c) Magnetic field density (d) None of these

19. A current carrying conductor is placed in a uniform magnetic field parallel to it. The magnetic force experienced by the conductor:
- (a)  $F = \frac{I}{LB \sin\theta}$  (b)  $F = 0$   
(c)  $F = IBL \sin\theta$  (d)  $F = \frac{IBL}{\sin\theta}$
20. The direction of force on a current carrying conductor placed in a magnetic field is that of:
- (a)  $\vec{L} \times \vec{B}$  (b)  $\vec{F} \cdot \vec{B}$   
(c) Magnetic field (d) Length of conductor
21. Magnetic field is a:
- (a) Scalar quantity (b) Vector quantity  
(c) Both (a) and (b) (d) None of these
22. The direction of magnetic lines of force around a current carrying conductor is given by:
- (a) Coulombs law (b) Ampere's law  
(c) Faraday's law (d) Right hand rule
23. The strength of magnetic field around a conductor is:
- (a) Directly proportional to the square of distance from the conductor  
(b) Same every where around the conductor  
(c) Both (a) and (b)  
(d) None of these
24. A magnetic compass will be deflected if it is kept near a:
- (a) Charge at rest (b) Charge in motion  
(c) No change (d) Both (a) and (b)
25. A current is passed through a straight conductor, the magnetic field produced around it. The magnetic lines of force are:
- (a) Straight (b) Circular  
(c) Parabolic (d) None of these
26. If a current carrying conductor is placed perpendicular to the magnetic field, it will experience a force:
- (a)  $F = 0$  (b)  $F = BIL \sin \theta$   
(c)  $F = BIL$  (d) None of these
27. A magnetic field:
- (a) Exerts a force if a charge particle is moving perpendicular to the magnetic field  
(b) Exerts a force if a charge particle is moving parallel to the magnetic field  
(c) Never exerts a force on charged particle  
(d) None of these

28. Which one of the following material is most suitable for making core of electrometer:
- (a) Steel (b) Cu – Ni alloy  
(c) Air (d) Soft iron
29. The magnetic force experienced by a charge particle moving in a magnetic field will be minimum when it moves:
- (a) Parallel to magnetic field (b) Anti-parallel to magnetic field  
(c) Perpendicular to magnetic field (d) None of these
30. The magnetic force experienced by a charge particle moving in a magnetic field will be maximum when it moves:
- (a) Parallel to magnetic field (b) Anti-parallel to magnetic field  
(c) Perpendicular to magnetic field (d) None of these
31. Vector area is vector whose direction is:
- (a) Perpendicular to the surface element (b) Parallel to the surface element  
(c) At an angle of  $45^\circ$  to the surface element (d) None of these
32. If the magnetic field is directed along the normal to the area, then magnetic flux is:
- (a) Zero (b) Maximum  
(c) Minimum (d) None of them
33. The unit of magnetic induction  $\vec{B}$  is:
- (a) Coulomb (b) Ampere  
(c) Coulomb/ampere (d) Weber/m<sup>2</sup>
34. Magnetic induction is defined as flux per unit area of the surface, which is:
- (a) Perpendicular to  $\vec{B}$  (b) Parallel to  $\vec{B}$   
(c) Both (a) and (b) (d) None of these
35. Magnetic flux density at any point due to a current carrying conductor can be computed from:
- (a) Newton's law (b) Coulomb's law  
(c) Ampere's law (d) Lenz's law
36. Amperean path is:
- (a) Circular path (b) Closed path  
(c) Rectangular path (d) Any of above
37.  $\mu_0$  is called:
- (a) Permeability of free space (b) Proportional constant  
(c) Permittivity of free space (d) None of these

38. A solenoid is a coil of wire, which is:
- (a) Short loosely wound cylindrical coil of wire
  - (b) Long tightly wound cylindrical coil of wire
  - (c) Both (a) and (b)
  - (d) None of these
39. The magnetic field is uniform and stronger:
- (a) Outside the solenoid
  - (b) Inside the solenoid
  - (c) At the central part of the solenoid
  - (d) None of these
40. In the formula,  $B = \mu_0 n I$ , where  $n$  represents:
- (a) Number of turns per unit length
  - (b) Number of turns per unit volume
  - (c) Number of turns per unit area
  - (d) All of above
41. The magnetic field inside the solenoid can be increased by:
- (a) Increasing number of turns
  - (b) Decreasing current
  - (c) Increasing current
  - (d) Both (a) and (c)
42. The permeability of free space is measured in:
- (a) wb A/m
  - (b) Am/wb
  - (c) wb/Am
  - (d) m/wbA
43. The strength of magnetic field is measured in SI units:
- (a) Am/N
  - (b) Nm/A
  - (c) N/Am
  - (d) N
44. Nm/A is commonly called:
- (a) Gauss
  - (b) Volt
  - (c) Ampere
  - (d) Weber
45. A long wire wound tightly on a cylindrical coil is called:
- (a) Toroid
  - (b) Slide wire bridge
  - (c) Potentiometer
  - (d) Solenoid
46. If the length of the solenoid is doubled without changing the number of turns then magnetic field:
- (a) is not changed
  - (b) becomes half
  - (c) becomes double
  - (d) None of these
47. If there are  $n$  charge carriers per unit volume then the number of charge carriers in a segment of wire of length  $L$  and area  $A$  is:
- (a)  $AL/n$
  - (b)  $n A/L$
  - (c)  $n AL$
  - (d)  $n L/A$

48. ♀ If an electron is projected in a magnetic field with velocity  $\vec{V}$ , it will experience a force:
- (a)  $\vec{F} = e (\vec{B} \times \vec{V})$  (b)  $\vec{F} = e (\vec{V} \times \vec{B})$   
 (c)  $\vec{F} = \vec{V} (e \times \vec{B})$  (d)  $\vec{F} = e (\vec{V} \cdot \vec{B})$
49. When the charge particle is projected at right angles to the magnetic field then force experienced will be:
- (a)  $F = qvB$  (b) Minimum  
 (c) Zero (d) None of these
50. When the charge particle is projected in the direction parallel to the magnetic field, then force experienced will be:
- (a)  $qvB$  (b) Maximum  
 (c) Zero (d) None of these
51. When an electric charge  $q$  is placed in an electric field, it will experience a force:
- (a) At an angle  $45^\circ$  to the field (b) Parallel to electric field  
 (c) Perpendicular to the field (d) None of these
52. If a charge is free to move in an electric field then acceleration produced in it will be:
- (a)  $a = \frac{qE}{m}$  (b)  $a = qEm$   
 (c)  $a = \frac{q}{Em}$  (d)  $A = \frac{m}{qE}$
53. Lorentz force means the force acting on a particle, which is:
- (a) Magnetic force only (b) Electric force only  
 (c) Sum of electric and magnetic force (d) None of these
54. In formula  $\vec{F} = e (\vec{V} \times \vec{B})$  where  $\vec{F}$  is:
- (a) Parallel to  $\vec{V}$  (b) Perpendicular to  $\vec{V}$  and  $\vec{B}$   
 (c) Parallel to  $\vec{B}$  (d) Perpendicular to  $\vec{B}$
55. When an electron enters at right angle to the magnetic field, the magnitude of velocity:
- (a) Remains constant (b) Decreases  
 (c) Increases (d) None of these
56. When an electron is projected in a direction perpendicular to the lines of magnetic force, its path may be:
- (a) Circular (b) Straight line  
 (c) Parabola (d) None of these
57. The  $e/m$  of an electron can be calculated if we know the value of:
- (a) Magnetic Field (b) Velocity of electron  
 (c) Radius of circular path (d) All of above

58. The  $e/m$  of an electron can be calculated by using the formula:
- (a)  $\frac{e}{m} = \frac{Vr}{Br}$  (b)  $\frac{e}{m} = \frac{2v}{B^2 r^2}$   
 (c)  $\frac{e}{m} = \frac{2Ve}{m}$  (d) None of these
59. If the magnetic flux is expressed in weber, then the magnetic induction can be expressed as:
- (a) Weber/m (b) Weber/m<sup>2</sup>  
 (c) Weber/m<sup>3</sup> (d) m/Weber
60. Which one of the following is the unit of magnetic induction:
- (a) Gauss (b) Dyne  
 (c) Ampere (d) Newton
61. The earth magnetic field always has a vertical component except at the:
- (a) Magnetic pole (b) Magnetic equator  
 (c) Both (a) and (b) (d) None of the above
62. Magnetic field is a:
- (a) Vector quantity (b) Scalar quantity  
 (c) Scalar as well as vector (d) None of these
63. The magnetic field at a point due to current carrying conductor is directly proportional to:
- (a) Current flows through the conductor (b) Distance from the conductor  
 (c) Resistance of the conductor (d) Thickness of the conductor
64. The direction of the magnetic field produced by a linear current is given by:
- (a) Joule's law (b) Ampere law  
 (c) Right hand rule (d) None of the above
65. Two free parallel wires carrying currents in opposite direction:
- (a) Repel each other (b) Attract each other  
 (c) Do not effect each other (d) All of above
66. Ampere's law mathematically can be expressed as:
- (a)  $\sum_{i=1}^N (\vec{B} \cdot \vec{\Delta L}) = \mu_0 I$  (b)  $\sum_{i=1}^N (\vec{B} \cdot \vec{\Delta L}) = \mu_0 A$   
 (c)  $\sum_{i=1}^N (\vec{B} \cdot \vec{\Delta L}) = \mu_0 N$  (d)  $\sum_{i=1}^N (\vec{B} \cdot \vec{\Delta L}) = \mu_0 R$
67. A current carrying conductor surrounded by:
- (a) Electric field (b) Magnetic field  
 (c) Gravitational field (d) All of the above

68. A charged particle moving with velocity  $\vec{V}$  in a magnetic field  $\vec{B}$  experiences a magnetic force is:
- (a)  $\vec{F} = \frac{(\vec{V} \times \vec{B})}{q}$  (b)  $\vec{F} = q(\vec{V} \cdot \vec{B})$
- (c)  $\vec{F} = q(\vec{V} \times \vec{B})$  (d)  $\vec{F} = \frac{\vec{V} \cdot \vec{B}}{q}$
69. The energy resides in a current carrying conductor in the form of:
- (a) Magnetic field (b) Electrostatic field
- (c) Gravitational field (d) All of above
70. If a moving electron deflected side ways on passing through a certain region of space, can we predict the presence of a magnetic field:
- (a) No (b) Yes
- (c) Maximum (d) None of above
71. The magnetic force experienced by a charged particle moving in a magnetic field will be maximum when it moves:
- (a) Perpendicular to the field (b) Parallel to the field
- (c) Anti parallel to the field (d) All of above
72. A compass needle will be deflected if it is kept near:
- (a) Charged body in motion (b) A negatively charged body at rest
- (c) A positively charged body at rest (d) none of the above
73. Ampere based his circuital law on the findings of:
- (a) Ampere himself (b) Laplace
- (c) Biot-sarvant (d) Maxwell
74. The total number of magnetic lines of force passing normally through a given area is called:
- (a) magnetic flux (b) flux density
- (c) self induction (d) mutual induction
75. Magnetic flux and flux density are related by:
- (a) Flux density = Flux  $\times$  Area (b) Flux density =  $\frac{\text{Flux}}{\text{Area}}$
- (c) Flux =  $\frac{\text{Flux density}}{\text{Area}}$  (d) None of the above
76. Which one of the following quantities can be replaced by magnetic induction:
- (a) Flux density (b) Magnetic flux
- (c) Magnetic field intensity (d) All of above
77. Charge to mass ratio (e/m) of a charged particle is also called:
- (a) Specific force (b) Specific charge
- (c) Both (a) and (b) (d) None of the above

78. The SI unit of permeability  $\mu_0$  is:
- (a) Weber  $-m/A$  (b) Weber/A.m  
(c) Weber  $-A/m$  (d) None of the above
79. A long tightly wound cylindrical coil of wire is called:
- (a) Capacitor (b) Resistance  
(c) Inductor (d) Solenoid
80. The magnetic field at the middle of the solenoid is:
- (a) Uniform and strong (b) Uniform  
(c) Strong (d) Weak
81. The magnetic field out of the solenoid is:
- (a) Negligible weak (b) Uniform  
(c) Uniform and strong (d) All of above
82. Ampere's circuital law is  $\sum_{i=1}^N (\vec{B} \cdot \Delta\vec{L})_i =$
- (a)  $\mu_0 I$  (b)  $\mu_0 A$   
(c)  $\mu_0 B$  (d) None of the above
83. Force on the current carrying conductor placed in a uniform magnetic field is:
- (a)  $I \vec{L} \times \vec{B}$  (b)  $Iq \times \vec{B}$   
(c)  $\frac{IL}{B}$  (d)  $I\vec{L} \times \vec{V}$
84. Which one is suitable for circular trajectory of a charged particle:
- (a) Magnetic field (b) Electric field  
(c) Conservative field (d) Gravitational field
85. In particle velocity method, the selected speed is equal to:
- (a)  $V = BE$  (b)  $V = \frac{E}{B}$   
(c)  $V = \frac{E}{F}$  (d) None of the above
86. One tesla is equal to:
- (a) 1 Gauss (b)  $10^4$  Gauss  
(c) 10 Gauss (d)  $10^{-4}$  Gauss
87. Magnetic flux density at a point due to the current carrying conductor determined by:
- (a) Faraday's law (b) Ampere's law  
(c) Flemming's law (d) Gauss's law

88. When a charged particle  $q$  is moving with velocity  $\vec{V}$  in a region where there is an electric field  $\vec{E}$  and magnetic field  $\vec{B}$  then the total electric and magnetic force on the particle is:
- (a)  $F = qE + qVB$  (b)  $F = qBV$   
(c)  $F = qVB - qE$  (d)  $F = BIL$
89. The expression for torque acting on a current carrying coil placed in a uniform magnetic field is equal to:
- (a)  $\tau = BIA \cos \alpha$  (b)  $\tau = BA \cos \alpha$   
(c)  $\tau = BIA \sin \alpha$  (d)  $\tau = IB \cos \alpha$
90. A device used for the measurement and detection of current is called:
- (a) Ammeter (b) Galvanometer  
(c) Voltmeter (d) All of the above
91. In case of galvanometer, the magnitude of the deflecting torque is given as:
- (a)  $BINA \cos \alpha$  (b)  $BIN \cos \alpha$   
(c)  $NIA \cos \alpha$  (d) none of above
92. The sensitivity of the galvanometer can be increased by increasing the:
- (a) Area of the coil (b) Strength of magnetic field  
(c) Number of turns of the coil (d) All of these
93. The sensitivity of a galvanometer depends upon the factors:
- (a)  $\frac{C}{BAN}$  (b)  $\frac{BAN}{C}$   
(c)  $\frac{BC}{AN}$  (d) None of these
94. Cathode ray oscilloscope works by deflecting a beam of:
- (a) Positrons (b) Electrons  
(c) Protons (d) Both electrons and protons
95. A sensitive galvanometer measures currents:
- (a) In milli amperes (b) In nano amperes  
(c) In amperes (d) In divisions of angle of twist
96. A moving coil galvanometer can be converted into ammeter by connecting:
- (a) A low resistance in series (b) A low resistance in parallel  
(c) A high resistance in series (d) None of these
97. A galvanometer can be converted into a voltmeter by connecting a:
- (a) High resistance in series (b) Low resistance in parallel  
(c) High resistance in parallel (d) None of these

98. The strength of magnetic field produced inside the solenoid when it has  $n$  turns per unit length and current  $I$  is:
- (a)  $B = \mu_0 n^2 I^2$  (b)  $B = \mu_0 NI$   
(c)  $B = \mu_0 nI$  (d)  $B = \mu_0 \frac{N}{l}$
99. The expression for charge to mass ratio of an electron is determined by:
- (a)  $\frac{e}{m} = \frac{r}{VB}$  (b)  $\frac{e}{m} = \frac{V}{B^2 r^2}$   
(c)  $\frac{e}{m} = \frac{v}{r}$  (d)  $\frac{e}{m} = \frac{B}{rv}$
100. The device used for displaying the waveform of given voltage is:
- (a) A.C generator (b) Cathode ray oscilloscope  
(c) D.C generator (d) Galvanometer
101. The force which deflects the coil of the galvanometer is called:
- (a) Deflecting torque (b) Ordinary torque  
(c) Reflecting torque (d) None of these
102. CRO works by deflecting the beam of electron as they pass through:
- (a) Uniform magnetic field  
(b) Uniform electric field between two sets of parallel plates  
(c) Non-uniform magnetic field  
(d) None of these
103. Indirectly heated cathode means that the:
- (a) Filament heats the cathode (b) Cathode heat, the filament  
(c) Grid heats the filament (d) None of these
104. The anode in CRO are at:
- (a) Lower potential w.r.t cathode (b) Higher potential w.r. to cathode  
(c) Same potential as cathode (d) None of these
105. The grides in CRO is at:
- (a) Negative potential w.r.to anode (b) Positive potential w.r.to anode  
(c) Negative potential w.r.to cathode (d) Both (a) and (b)
106. In CRO, there are:
- (a) Power deflecting plates (b) Two sets of deflecting plates  
(c) Three sets of deflecting plats (d) None of these
107. The voltage applied across Y-plate deflects the beam:
- (a) Vertically on the screen (b) Horizontally on the screen  
(c) Both (a) and (b) (d) None of these

- 108.** The voltage applied across X-plats deflects the beam:
- (a) Vertically on the screen                      (b) Horizontally on the screen  
(c) Both (a) and (b)                              (d) None of these
- 109.** In CRO, the output waveform of time base generator is:
- (a) Circular    (b) Square  
(c) Sinusoidal                                        (d) Saw-toothed
- 110.** Saw toothed waveform means that its voltage:
- (a) Decreases linearly with time  
(b) Increases linearly with time  
(c) Increases linearly with time and then drops to zero  
(d) None of these
- 111.** By means of waveform displayed on the screen of CRO, we can measure:
- (a) Frequency of voltage                      (b) Voltage  
(c) Phase of voltage                              (d) All of above
- 112.** An instrument which can measure potential without drawing any current is called:
- (a) Voltmeter                                        (b) Potentiometer  
(c) CRO    (d) Ammeter
- 113.** The cathode ray oscilloscope is useful for:
- (a) A volt meter  
(b) Wave shape of rapidly changing lubricants  
(c) Measuring time interval between electrical plates  
(d) All of the above
- 114.** What is emitted by the hot metal filament in a cathode ray oscilloscope:
- (a) Electron                                        (b) X-plates  
(c) Protons                                         (d) Y-plates
- 115.** How are the electrons produced in a cathode ray oscilloscope:
- (a) By heating a metal filament              (b) By ionization of the air  
(c) By applying an electric field            (d) None of these
- 116.** The function of grid in cathode ray oscilloscope is:
- (a) To control the number of electrons accelerated by anode  
(b) To control the brightness of spot formed on the screen  
(c) Both (a) and (b)  
(d) None of these

117. The electron gun in cathode ray oscilloscope consists of:
- (a) Grid (b) Three anodes  
(c) Indirectly heated cathode (d) All of the above
118. The current passing through the coil of galvanometer is directly proportional to:
- (a) Angle of deflection (b) Magnetic field  
(c) Number of turns (d) Resistance of the coil
119. What is the current in a wire of 10 cm long at right angle to a magnetic field of 0.5 T when force acting on the wire is 5 N:
- (a)  $I = 10 \text{ A}$  (b)  $I = 50 \text{ A}$   
(c)  $I = 500 \text{ A}$  (d)  $I = 100 \text{ A}$
120. When a charged particle moves through a magnetic field, the field changes the particle:
- (a) Mass (b) Energy  
(c) Speed (d) Direction of motion
121. Which one of the following particles moving in the magnetic field cannot be deflected:
- (a) Neutron (b)  $\alpha$ -particle  
(c)  $\beta$ -particle (d) Proton
122. The working of galvanometer depends upon:
- (a) Material of the coil (b) Torque exerted on the coil  
(c) Magnetic force exerted on the coil (d) None of the above
123. For accurate measurement of current through a circuit, the resistance of ammeter should be:
- (a) Very small (b) Very high  
(c) Neither small nor high (d) None of the above
124. To convert a galvanometer into an ammeter, the shunt resistance is given by:
- (a)  $R_s = \frac{I_g R_g}{I + I_g}$  (b)  $R_s = \frac{I_g R_g}{I - I_g}$   
(c)  $R_s = \frac{I - I_g}{I} \times R_g$  (d)  $R_s = (I - I_g) R_g$
125. To convert a galvanometer into a voltmeter, a high resistance  $R_h$  connected in series with the galvanometer is given by:
- (a)  $R_h = \frac{V}{R_g} - I_g$  (b)  $R_h = \frac{R_g}{V} - I_g$   
(c)  $R_h = \frac{V}{I_g} - R_g$  (d)  $R_h = \frac{V}{R_g} + I_g$
126. To measure potential difference across a resistor, voltmeter is always connected in:
- (a) Parallel  
(b) Series  
(c) Some times in series and some times in parallel  
(d) None of the above

127. A device which can measure current, potential difference and resistance accurately is called:
- (a) Ammeter (b) Voltmeter  
(c) AVO meter (d) Ohm meter
128. In CRO when beam of electrons falls on a screen it makes a visible spot because the screen is:
- (a) Rough (b) Fluorescent  
(c) Polished (d) Clear
129. In CRO when cathode is heated by a filament it emits:
- (a) Protons (b) Electrons  
(c) Rays (d) Radiation
130. Force on a moving charge in magnetic field is maximum when angle between velocity and magnetic field is:
- (a)  $\theta = 90^\circ$  (b)  $\theta = 270^\circ$   
(c)  $\theta = 180^\circ$  (d)  $\theta = 360^\circ$
131. The force on a moving charge in magnetic field is zero when angle between velocity and magnetic field is:
- (a)  $\theta = 0^\circ$  OR  $180^\circ$  (b)  $\theta = 90^\circ$   
(c)  $\theta = 270^\circ$  (d)  $\theta = 45^\circ$
132. The unit of magnetic force is:
- (a) Tesla (b) Gauss  
(c) Newton (d) Ampere
133. The galvanometer usually consists of a:
- (a) Coil placed in a magnetic field (b) Coil placed in an electric field  
(c) Coil and a scale only (d) None of these
134. The coil of a galvanometer is suspended between the poles of a U-shaped magnet which are:
- (a) Concave shaped (b) Convex shaped  
(c) Plane-shaped (d) Spherical shaped
135. The rectangular coil of a galvanometer is made of:
- (a) Enameled steel wire (b) Copper wire  
(c) Enameled copper wire (d) None of these
136. To make the field stronger near the coil of the galvanometer, we place inside the coil a:
- (a) Soft iron cylinder (b) Soft steel cylinder  
(c) Soft copper cylinder (d) None of these
137. A moving coil galvanometer is based on the following effect of current:
- (a) Chemical effect (b) Magnetic effect  
(c) Heating effect (d) All

138. While construction a galvanometer, the enameled copper wire is wound on:
- (a) Magnetic material (b) An insulator  
(c) A conductor (d) Non-magnetic material
139. Radial magnetic field is used in a galvanometer so that the galvanometer scale is:
- (a) Exponential (b) Circular  
(c) Linear (d) None of these
140. In lamp and scale arrangement for measures the angle of deflection, the scale is:
- (a) Translucent (b) Mass scale  
(c) Transparent (d) None of these
141. In a pivoted type galvanometer, the coil is pivoted between two:
- (a) Bearings (b) Jewels  
(c) Jewelled bearings (d) All are correct
142. Such a galvanometer in which the coil comes to rest quickly after the current passed through it is called:
- (a) Stable galvanometer (b) Sensitive galvanometer  
(c) Both (a) and (b) (d) None of these
143. A moving coil galvanometer can be converted into:
- (a) Voltmeter (b) Ohmmeter  
(c) Ammeter (d) All of above
144. An AVO meter is also called:
- (a) A multi meter (b) An ammeter  
(c) An ohmmeter (d) None of these
145. To convert a galvanometer into an ammeter, we connect with it a:
- (a) Shunt resistance (b) Low value parallel  
(c) Low value by pass resistor (d) All of above
146. To convert a galvanometer into a voltmeter, we connect with it a:
- (a) Shunt resistance (b) A high value series resistance  
(c) Parallel resistance (d) None of these
147. The resistance of shunt is:
- (a) Verge large (b) Very small  
(c) Both (a) and (b) (d) None of these
148. An AVO meter can measure:
- (a) Potential difference in volt (b) Current in Ampere  
(c) Resistance in ohms (d) All of above

149. When the ohmmeter measures the infinite resistance, its pointer lies at:
- (a) Center of the scale (b) Left end of the scale  
(c) Right end of the scale (d) None of these
150. A proper combination of a galvanometer and a series resistance acts as:
- (a) Voltmeter (b) Ammeter  
(c) Ohmmeter (d) None of these
151. The relation between current  $I$  and angle of deflection in a moving coil galvanometer is:
- (a)  $I \propto \frac{1}{\theta}$  (b)  $I \propto \cos \theta$   
(c)  $I \propto \theta$  (d)  $I \propto \sin \theta$
152. Which of the following is correct?
- (a)  $1 \text{ T} = 10^3 \text{ G}$  (b)  $1 \text{ T} = 10^4 \text{ G}$   
(c)  $1 \text{ T} = 10^{-4} \text{ G}$  (d) None of these
153. Two parallel wires carrying current in opposite direction:
- (a) Repel each other (b) Attract each other  
(c) No effect on each other (d) None of these
154. Which one of the following is not deflected by magnetic field?
- (a)  $\alpha$ -particle (b)  $\beta$ -particle  
(c) Neutrons (d) None of these
155. If an electron enters the magnetic field at right angle from left and  $\vec{B}$  is into paper, electron will be deflected:
- (a) Upward (b) Downward  
(c) No deflection (d) None of these
156. A solenoid 15 cm, long has 300 turns,  $I = 5 \text{ A}$ ,  $B =$
- (a)  $1.3 \times 10^{-2} \text{ wbm}^{-2}$  (b)  $1.3 \times 10^2 \text{ wb m}^{-2}$   
(c)  $1.3 \times 10^{-2} \text{ G}$  (d)  $1.3 \times 10^{-2} \text{ wb}$
157. The sensitivity of galvanometer can be increased by decreasing:
- (a) Area of coil (b) Magnetic field  
(c) Number of turns of coil (d) Torsional constant
158. Pole pieces of magnet in galvanometer are made concave to make field:
- (a) Radial (b) Strong  
(c) Both (a), (b) (d) Weaker
159. In a velocity selector, particle pass through it if:
- (a)  $\vec{F}_e = \vec{F}_B$  (b)  $\vec{F}_e = \vec{F}_g$   
(c)  $\vec{F}_e = \vec{F}_B^2$  (d)  $\vec{F}_e = -\vec{F}_B$

- 160.** Unit of permeability of free space is:
- (a)  $\text{wbA}^{-1}\text{m}^{-1}$  (b)  $\text{NmA}^{-1}$   
(c)  $\text{Nm}^{\circ}\text{A}^{-2}$  (d) None of these
- 161.** Magnetic field inside a solenoid is:
- (a) Zero (b) Minimum  
(c) Maximum (d) None of these
- 162.** In finding the value of  $e/m$ , apparatus used is:
- (a) Cavendish (b) Teltron tube  
(c) Mass spectrograph (d) None of these
- 163.** In finding the value of  $e/m$ , velocity of electron can be calculated by using:
- (a) Potential difference (b) Velocity selector  
(c) Both (a), (b) (d) None of these
- 164.** In case of torque on a current carrying coil  $\alpha$  is angle between:
- (a)  $\vec{B}$  and  $\vec{A}$  (b)  $\vec{B}$  and coil  
(c)  $\vec{B}$  and plane of coil (d) None of these
- 165.** A galvanometer in which magnet rotates is:
- (a) Moving coil (b) Tangent  
(c) Ballistic (d) None of these
- 166.** We define sensitivity (current) of a galvanometer as the current in  $\mu\text{A}$  required to produce \_\_\_\_\_ deflection on a scale placed one metre away from mirror of galvanometer.
- (a) 1 mm (b) 2 mm  
(c) 1 cm (d) 1 m
- 167.** In lamp and scale arrangement, mirror used is:
- (a) Convex mirror (b) Convex lens  
(c) Concave mirror (d) None of these

## ANSWERS

1.	(d)	2.	(a)	3.	(a)	4.	(c)	5.	(a)
6.	(c)	7.	(b)	8.	(a)	9.	(c)	10.	(b)
11.	(a)	12.	(a)	13.	(d)	14.	(d)	15.	(c)
16.	(a)	17.	(c)	18.	(a)	19.	(b)	20.	(a)
21.	(b)	22.	(d)	23.	(b)	24.	(b)	25.	(b)
26.	(b)	27.	(a)	28.	(d)	29.	(a)	30.	(c)
31.	(a)	32.	(b)	33.	(d)	34.	(a)	35.	(c)
36.	(a)	37.	(a)	38.	(b)	39.	(c)	40.	(a)
41.	(d)	42.	(c)	43.	(c)	44.	(d)	45.	(d)
46.	(b)	47.	(c)	48.	(b)	49.	(a)	50.	(c)
51.	(b)	52.	(a)	53.	(c)	54.	(b)	55.	(a)
56.	(a)	57.	(d)	58.	(b)	59.	(b)	60.	(a)
61.	(a)	62.	(a)	63.	(a)	64.	(c)	65.	(a)
66.	(a)	67.	(b)	68.	(c)	69.	(a)	70.	(b)
71.	(a)	72.	(a)	73.	(c)	74.	(a)	75.	(b)
76.	(a)	77.	(b)	78.	(b)	79.	(d)	80.	(a)
81.	(a)	82.	(a)	83.	(a)	84.	(a)	85.	(b)
86.	(b)	87.	(b)	88.	(a)	89.	(a)	90.	(b)
91.	(a)	92.	(d)	93.	(a)	94.	(b)	95.	(d)
96.	(b)	97.	(a)	98.	(c)	99.	(b)	100.	(b)
101.	(a)	102.	(a)	103.	(a)	104.	(b)	105.	(c)
106.	(b)	107.	(a)	108.	(b)	109.	(d)	110.	(c)
111.	(d)	112.	(b)	113.	(b)	114.	(a)	115.	(a)
116.	(c)	117.	(d)	118.	(a)	119.	(d)	120.	(d)
121.	(c)	122.	(b)	123.	(a)	124.	(b)	125.	(c)
126.	(a)	127.	(c)	128.	(b)	129.	(b)	130.	(a)
131.	(a)	132.	(c)	133.	(a)	134.	(a)	135.	(c)
136.	(a)	137.	(b)	138.	(d)	139.	(c)	140.	(a)
141.	(c)	142.	(b)	143.	(d)	144.	(a)	145.	(c)
146.	(b)	147.	(b)	148.	(d)	149.	(b)	150.	(a)
151.	(c)	152.	(b)	153.	(a)	154.	(c)	155.	(b)
156.	(b)	157.	(d)	158.	(c)	159.	(d)	160.	(a)
161.	(c)	162.	(b)	163.	(c)	164.	(c)	165.	(b)
166.	(a)	167.	(c)						