Electrostatics

1. The branch of science which deals with study of _______ charges, is called electrostatics: A
   a) Rest b) Move
   c) Simple d) None of these

2. Like charges _______ each other: B
   a) Attract b) Repel
   c) Contract d) None of these

3. Unlike charges _______ each other: C
   a) Contract b) Directly
   c) Attract d) Repel

4. A substance through which an electric current can pass, is called _______: A
   a) Conductor b) Charge
   c) Electric d) None of these

5. The conductor is a substance which contains _______ electrons: D
   a) Close b) Open
   c) Electric d) Free

6. The substance through which an electric current cannot pass, is called _______: A
   a) Insulator b) Conductor
   c) Plastic d) Rubber

7. The insulator is a substance which does not contain _______ electrons: C
   a) Close b) Open
   c) Free d) Pass

8. The force of attraction or repulsion between any two charges is directly proportional to the magnitudes of the charges and _______ proportional to the square of the distance between them: A
   a) Inversely b) Directly
   c) Equal d) Conductor

9. According to Coulomb's law, if "q1" and "q2" are any two charges and "r" is distance between them, then _______: B
   a) $F = \frac{Kr^2}{q_1 q_2}$ b) $F = K\frac{q_1 q_2}{r^2}$
   c) $F = \frac{Kq_1 r^2}{q_2}$ d) None of these

10. The value of "K" is constant and it depends upon the _______ between the charges: A
    a) Medium b) Force
    c) Direction d) None of these

11. The value of "K" = _______: A
    a) $\frac{1}{4\pi \in_0}$ b) $\frac{1}{6\pi \in_0}$
    c) $\frac{1}{8\pi \in_0}$ d) $\frac{1}{10\pi \in_0}$

12. The value of "$\in_0$" in Coulomb's law is _______: B
    a) 4.16×10^{-11} Nm^2 b) 8.85×10^{-12} C^2/Nm^2
    c) 6.14×10^{-4} Nm^2 d) None of these

13. The force between two charges decreases by placing an _______ between two charges: A
    a) Insulator b) Iron rod
    c) Constant d) None of these

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14. The SI unit of charge is _______: B
a) Joule b) Coulomb
c) Work d) Kilometer

15. The amount of charges which passes through a wire in one second when a steady current of 1A is passing in a wire, is called _______: A
a) One Coulomb b) One Joule
c) One Kilometer d) None of these

16. The area near an electric charge with in which it exerts force on another charged particle, is called: A
a) Electric Field b) Particle
c) Source charge d) Coulomb

17. The charge which is used to produce an electric field, is called _______: B
a) Electric field b) Field charge
c) Electric intensity d) Test charge

18. The field charge is also called _______: A
a) Source charge b) Test charge
c) Electric intensity d) None of these

20. The strength of an electric field is known as _______ intensity of the field: A
a) Electric b) Positive
c) Coulomb d) Amount

21. Electric intensity is a _______ quantity: C
a) Electric b) Scalar
c) Vector d) None of these

22. The general symbol to represent electric intensity is _______: D
a) $\vec{R}$ b) $\vec{F}$
c) $\vec{C}$ d) $\vec{E}$

23. If the field charge applies a force $\vec{F}$ on the test charge q_o, then formula for electric intensity is _______: A
a) $\vec{E} = \frac{\vec{F}}{q_0}$ b) $\vec{E} = \frac{q_0}{\vec{F}}$
c) $\vec{E} = \vec{F} q_0$ d) None of these

24. The SI unit of electric intensity is _______: A
a) N / Coulomb b) N^2 / Coulomb
c) J / Coulomb d) None of these

25. The dimensions of electric intensity are _______: C
a) ML^2T^3 b) $ML^{-1}T^3$
c) $MLT^{-2}C^{-1}$ d) $MLT^{-3}C^2$

26. The points where the resultant intensity is zero, are called _______: B
a) Extra points b) Neutral points
c) Electric field d) Positive charge

27. The electric lines of forces start from a positive charge and end on a _______: A
a) Negative charge b) Each other
c) Perpendicular d) Conductor

28. The electric lines of forces can never _______ each other: A
a) Intersect b) Change
c) Parallel d) None of these

29. The lines of forces are _______ to the surface of the conductor: B
a) Intersect b) Perpendicular
c) Electric d) None of these

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30. The lines of forces do not exist inside the _______: A
a) Conductor b) Image
c) Electric d) None of these

31. As we move away from the field the field charge, the density of the lines of force _______: C
a) Increase b) Zero
c) Decreases d) Null

32. Electric flux is given as : B
a) $\Delta\phi_E = \vec{E} + \Delta\vec{A}$ b) $\Delta\phi_E = \vec{E}\ \Delta\vec{A}$
c) $\Delta\phi_E = \frac{\vec{E}}{\Delta\vec{A}}$ d) None of these

33. Electric flux is a _______ quantity: A
a) Scalar b) Vector
c) Zero d) None of these

34. When vector area $\Delta\vec{A}$ makes an angle "θ" with the electric intensity _______: C
a) $\phi_E = \frac{\vec{E}}{\Delta\vec{A}}$ b) $\phi_E = \vec{E} + \Delta\vec{A}$
c) $\phi_E = \vec{E} . \Delta\vec{A} \cos\theta$ d) None of these

35. When an angle between $\vec{E}$ and $\Delta\vec{A}$ is 0^o, then flux passing through an area will be _______: B
a) Minimum b) Maximum
c) Zero d) Full

36. When an angle between $\vec{E}$ and $\Delta\vec{A}$ is 90^o, then flux passing through an area will be _______: A
a) Minimum b) Maximum
c) Zero d) Null

37. When an angle between $\vec{E}$ and $\Delta\vec{A}$ is greater than 90^o, then flux passing through an area will be _______: A
a) Negative b) Positive
c) Null d) None of these

38. When an angle between $\vec{E}$ and $\Delta\vec{A}$ is less than 90^o, then flux passing through an area will be _______: C
a) Negative b) Null
c) Positive d) None of these

39. The formula for the electric flux through the surface of a sphere due to a charge "+q" at its center is _______: A
a) $\phi_e = \frac{q}{\epsilon_0}$ b) $\phi_e = \frac{\epsilon_0}{q}$
c) $\phi_e = q + \epsilon_0$ d) $\phi_e = q - \epsilon_0$

40. According to _______ law, "The total electric flux through a closed surface is equal to the product of $\frac{1}{\epsilon_0}$ and charge enclosed in the surface." B
a) Newton's b) Gauss's
c) Joule's d) None of these

41. The formula for Gauss's law is _______: A
a) $\phi_e = \frac{1}{\epsilon_0} \times Q$ b) $\phi_e = \epsilon_0 \times Q$
c) $\phi_e = \phi_1 + \phi_2$ d) None of these

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42. The work done in moving a unit positive charge from one point to an other point against an electric field is called _______: B
a) Electric field b) Potential difference
c) Potential d) Volt

43. The work done in moving a unit positive charge from infinity to that point against the electric field intensity is called _______; A
a) Absolute potential b) Volt
c) Joule d) Coulomb

44. The unit of potential is _______: C
a) Joule b) Coulomb
c) Volt d) Newton

45. The formula for 1 volt = _______: A
a) $\frac{1\text{Joule}}{1\text{Coulomb}}$ b) $\frac{1\text{Coulomb}}{1\text{Joule}}$
c) $\frac{1\text{Kilometer}}{1\text{Coulomb}}$ d) None of these

46. The general relation for absolute potential or voltage due to point charge "q" at a distance "r" from it, is _______: B
a) $V = \frac{1}{6\pi \in_0} . \frac{q}{r}$ b) $V = \frac{1}{4\pi \in_0} . \frac{q}{r}$
c) $V = \frac{1}{8\pi \in_0} . \frac{q}{r}$ d) None of these

47. The potential due to n-point charges is _______: A
a) $V = \frac{1}{4\pi \in_0} \left[\sum_{i=1}^{i=n} \frac{q_i}{r_i} \right]$ b) $V = \frac{1}{2\pi \in_0} \left[\sum_{i=1}^{n=i} \frac{q_i}{r_i} \right]$
c) $V = \frac{1}{3\pi \in_0} \left[\sum_{i=1}^{n=i} \frac{q_i}{r_i} \right]$ d) None of these

48. The surface which have the same value of potential at all points is called _______: C
a) Concentric surface b) Equi surface
c) Equipotential surface d) Charged surface

49. The value of one electron volt = _______: A
a) $1 \text{ ev} = 1.6\times 10^{-19}\text{J}$ b) $2 \text{ ev} = 1.6\times 10^{-19}\text{J}$
c) $3 \text{ ev} = 6.1\times 10^{-19}\text{J}$ d) $1 \text{ ev} = 2.1\times 10^{-19}\text{J}$

50. A capacitor is a device which is used to _______ charges: D
a) Negative b) Equal
c) Difference d) Store

51. The ratio between charge and potential difference is called _______ of a capacitor: B
a) Difference b) Capacitance
c) Intensity d) None of these

52. The formula for capacitance is _______: A
a) $C = \frac{Q}{V}$ b) $C = QV$
c) $C = \frac{V}{Q}$ d) $V = \frac{C}{Q}$

53. The SI unit of capacitance is called a _______: B
a) Joule b) Farad
c) Newton d) Capability

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54. The capacitor whose capacitance can be changed, is called _______ capacitor: B
a) Constant b) Variable
c) Circular d) None of these

55. The capacitor whose capacitance cannot be changed, is called _______ capacitor: A
a) Fixed b) Capacitance
c) Decrease d) Capacitor

56. When a charge falls from higher potential to lower potential, it loses P.E. and _______ K.E.: B
a) Fixed b) Gains
c) Loses d) Move

57. Atom is a: D
a) Positively charged particle b) Negative charged particle
c) Charged particle d) Neutral particle

59. Concept of electric field theory was introduced by: A
a) Michael Faraday b) Newton
c) Dalton d) Kepler

60. If electrons are added in an atom, it becomes: C
a) Positively charged particle b) Neutral particle
c) Negatively charged particle d) None of these

61. The force per unit charge is known as: C
a) Electric volt b) Electric flux
c) Electric intensity d) Electric potential

62. The law that governs the force between electric changes is called: B
a) Ampere’s law b) Coulomb’s law
c) Faraday’s law d) Ohm’s law

63. Which one of the following is the unit of electric charge? A
a) Coulomb b) Newton
c) Volt d) Coulomb/volt

64. Which one of the following is the unit of electric field intensity? D
a) Volt$\times$ Second b) Volt$\times$ Joule
c) Volt$\times$ Ampere d) Volt$\times$ Meter^{-1}

65. The force between two electrons separated by a distance r varies as: D
a) r^2 b) r
c) r^{-1} d) r^{-2}

66. When the distance between two charged particles is halved, the force between them becomes: D
a) One-fourth b) One-half
c) Double d) Four times

67. Two charges are placed at a certain distance apart. A brass sheet is placed between them. The force between them will: A
a) Increase b) Decrease
c) Remain unchanged d) None of these

68. Two charges are placed at a distance apart. If a glass slab is placed between them, force between them will: C
a) Be zero b) Increase
c) Decrease d) Remain the same

70. There are two charges +1 micro – coulomb and 5 micro – coulomb. The ratio of the forces acting on them will be: B
a) 1 : 5 b) 1 : 1
c) 5 : 1 d) 1 : 25

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71. F_g and F_e represent gravitational and electrostatic force respectively between electrons situated at a distance of 10 cm. The ratio of F_g / F_e is of the order: D
a) 10^{42} b) 10
c) 1 d) 10^{-42}

72. The ratio of the forces between two small spheres with constant charges (a) in air (b) in a medium of dielectric constant k is respectively: B
a) 1 : k b) k : 1
c) 11 : k^2 d) k^2 : 1

73. A charge q_1 exerts some force on a second charge q_2. If third charge q_3 is brought near q_1, the force of q_1 exerted on q_2: D
a) Decrease b) Increase
c) Remains unchanged d) Increase if q_3 is of same sign as q_1 and decrease if q_3 is of opposite sign

74. A soap bubble is given negative charges, then its radius: B
a) Decrease b) Increases
c) Remains unchanged d) Nothing can be predicted as information is insufficient

76. An electric field can deflect: C
a) X-rays b) Neutrons
c) α -particles d) γ -rays

77. Electric intensity at a place due to a charged conductor is a: B
a) Scalar quantity b) Vector quantity
c) Semi vector and semi scalar quantity d) Dimensions quantity

79. The electric field inside a spherical shell of uniform surface charge density is: A
a) Zero b) Constant less than zero
c) Directly proportional to the distance from the center
d) None of the above

80. Electric lines of force about a negative point charge are: C
a) Circular, anti-clock wise b) Circular, clock wise
c) Radial, inward d) Radial, outward

81. If an electron has an initial velocity in a direction different from that of an electric field, the path of the electron is: D
a) A straight line b) A circle
c) An ellipse d) A parabola

82. A hollow sphere of charge does not produce an electric field at any: A
a) Interior point b) Outer point
c) Beyond 2 metros d) Beyond 10 metros

83. The force experienced by a unit positive charge when placed in an electric field is called: C
a) Potential of electric field at that point b) Moment of electric field at that point
c) Intensity of electric field at that point d) Capacity of electric filed at that point

84. The intensity at a point due to a charge is inversely proportional to the: B
a) Amount of charge b) Size of charge
c) Distance of the point d) Square of the distance from the charge

88. Electric potential is a: A
a) Scalar quantity b) A vector quantity
c) Dimensions d) Nothing can be said

89. An equipotential surface is that surface: A
a) On which each and every point has the same potential
b) Which has negative potential
c) Which has positive potential d) Which has zero potential

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90. If a unit charge is taken from one point to another over an equipotential surface, then: A
   a) Work is done on the charge
   b) Work is done by the charge
   c) Work on the charge is constant
   d) No work is done

91. An electric dipole is kept in non-uniform electric field. It experiences: A
   a) A force and a Torque
   b) A force but not a Torque
   c) A Torque but not a force
   d) Neither a force nor a Torque

92. Which one of the following statements regarding the capacitance of a parallel plate condenser is wrong: D
   a) Capacitance of a parallel plate condenser varies linearly with common area of plate
   b) Capacitance of a parallel plate condenser varies inversely with separation of the plates
   c) Capacitance of a parallel plate condenser varies with the material between the plates
   d) Capacitance of a parallel plate condenser varies with the metal of the plates

93. The capacitance of parallel plate condenser varies with: A
   a) Area of the plates
   b) Medium between the plates
   c) Distance between the plates
   d) Metal of the plates

94. In a charged capacitor, the energy is stored in: A
   a) The field between the plates
   b) The positive charges
   c) The negative charges
   d) All of these

96. Farad is a unit of: B
   a) Self-inductance
   b) Capacitance
   c) Mutual inductance
   d) Conductance of an electrolyte

100. The capacitance of a parallel plate condenser is C. Its capacity when the separation between the plates is halved will be: B
   a) 4C
   b) 2C
   c) C/2
   d) C/4

101. Two condensers of capacitance C_1 and C_2 respectively are connected in parallel. The equivalent capacitance of the system is: A
   a) $C_1 + C_2$
   b) C1 C2 / $(C_1 + C_2)$
   c) $C_1 – C_2$
   d) $(1/C_1) + (1/C_2)$

102. The empty space between the plates of a capacitor is filled by a liquid of dielectric constant K. The capacitance of capacitor: A
   a) Increases by a factor K
   b) Decreases by a factor K
   c) Increases by a factor K^2
   d) Decreases by a factor K^2

103. In order to increase the capacity of a parallel plate condenser one should introduce between the plates a sheet of: A
   a) Mica
   b) Tin
   c) Copper
   d) None of these

105. A capacitor is charged by using a battery, which is then disconnected. A dielectric slab is then slipped between the plates, which results in: C
   a) Reduction of charge on the plates and increase of potential difference across the plates
   b) Increase in the potential difference across the plates, reduction in stored energy, but no change in the charge on the plates
   c) Decrease in the potential difference across plates, reduction in stored energy, but no change in the charge on plates
   d) None of the above

106. Electron volt is the unit of: B
   a) Potential difference
   b) Electrical energy
   c) Electric current
   d) Capacitance