NEET PHYSICS

Topic: Electrostatics

Q.1 If a glass rod is rubbed with silk, it acquires a positive charge because -
(1) Protons are added to it.
(2) Protons are removed from it.
(3) Electrons are added to it.
(4) Electrons are removed from it.

Q.2 Which one of the following statement regarding electrostatics is wrong?
(1) Charge is quantized
(2) Charge is conserved
(3) There is an electric field near an isolated charge at rest
(4) A stationary charge produces both electric and magnetic fields

Q.3 The dielectric constant for water is -
(1) 1   (2) 40   (3) 81   (4) 0.3

Q.4 A stationary electric charge produces-
(1) Only electric fields
(2) Only magnetic field
(3) Both electric as magnetic field
(4) Neither electric Nor magnetic field

Q.5 An isolated solid metallic sphere is charged with +Q charge .The distribution of their +Q charge on the sphere will be
(1) uniform but on the surface alone
(2) non uniform but on the surface alone
(3) uniform inside the volume
(4) non uniform inside the volume

Q.6 When the distance between two charged particle is halved, the force between them becomes-
(1) One fourth   (2) One half   (3) Double   (4) Four times

Q.7 The force between two point charges in vacuum is 15N, if a brass plate is introduced between the two charges, then force between them will-
(1) Becomes zero   (2) Remains the same   (3) Becomes 30 N   (4) Becomes 60 N

Q.8 The force between an -particle and an electron separated by a distance of 1 Å is -
(1) 2.3×10^{-8} N attractive
(2) 2.3×10^{-8} N Repulsive
(3) 4.6×10^{-8} N attractive
(4) 4.6×10^{-8} repulsive

Q.9 Two charges are at distance (d) apart in air. Coulomb force between them is F. If a dielectric material of dielectric constant (K) is placed between them, the coulomb force now becomes.
(1) F/K   (2) FK   (3) F/K^2 (4) K^2F

Q.10 Two point charges in air at a distance of 20 cm. from each other interact with a certain force. At what distance from each other should these charges be placed in oil of relative permittivity 5 to obtain the same force of interaction –
(1) 8.94×10^{-2} m   (2) 0.894×10^{-2} m   (3) 89.4×10^{-2} m   (4) 8.94×10^{2} m

Q.11 A certain charge Q is divided at first into two parts, (q) and (Q-q). Later on the charges are placed at a certain distance. If the force of interaction between the two charges is maximum then-

(1) $(Q/q) = (4/1)$ (2) $(Q/q) = (2/1)$

(3) $(Q/q) = (3/1)$ (4) $(Q/q) = (5/1)$

Q.12 A unit charge is one which when placed in vacuum one cm from an equal charge of the same kind will repel it with a force of-

(1) 1 N   (2) 1 dyne   (3) 2 dyne   (4) 4 dyne

Q.13 The force between two point charges placed in vacuum at distance 1 mm is 18 N. If a glass plate of thickness 1 mm and dielectric constant 6, be kept between the charges then new force between them would be-

(1) 18 N

(2) 108 N

(3) 3 N

(4) 3×10^{-6} N

Q.14 Two similar and equal charges repel each other with force of 1.6 N, when placed 3m apart. Strength of each charge is-

(1) 40 μC   (2) 20μC

(3) 4μC   (4) 2μC

Q.15 There are two charges +1 micro-coulomb and +5 micro-coulomb, the ratio of force on them will be–

(1) 10^{43} (2) 1 : 1

(3) 10° (4) 10^{-43}

Q.16 The three charges each of 5×10^{-6} coloumb are placed at vertex of an equilateral triangle of side 10cm. The force exerted on the charge of 1 μ C placed at centre of triangle in newton will be

(1) 13.5   (2) zero

(3) 4.5   (4) 6.75

Q.17 A point charge q_1 exerts a force F upon another charge q_2. If one other charge q_3 be placed quite near to charge q_2, then the froce that charge q_1 exerts on the charge q_2 will be

(1) F   (2) >F   (3) < F   (4) zero

Q.18 ABC is a right angle triangle AB=3cm, BC=4cm charges + 15, +12, −12 esu are placed at A, B and C respectively. The magnitude of the force experienced by the charge at B in dyne is-

(1) 125   (2) 35   (3) 22   (4) 0

Q.19 Equal charges of each 2μC are placed at a point x = 0, 2, 4, and 8 cm on the x-axis. The force experienced by the charge at x=2 cm is equal to -

(1) 5 N   (2) 10 N

(3) 0 N   (4) 15 N

Q.20 Two charges 4q and q are placed 30 cm. apart. At what point the value of electric field will be zero (1) 10 cm. away from q and between the charge   (2) 20 cm. away from q and between the charge

(3) 10 cm. away from q and out side the line joining the charge.

(4) 10 cm. away from 4q and out side the line joining them.

Q.21 Four equal but like charge are placed at four corners of a square. The electric field intensity at the center of the square due to any one charge is E, then the resultant electric field intensity at centre of square will be :

(1) Zero   (2) 4E

(3) E   (4) 1/2E

Q.22 If mass of the electron = 9.1×10^{-31} Kg. Charge on the electron = 1.6×10^{-19} coulomb and g = 9.8 m/s^2. Then the intensity of the electric field required to balance the weight of an electron is-

(1) 5.6×10^{-9} N/C   (2) 5.6×10^{-11} N/C   (3) 5.6×10^{-8} N/C   (4) 5.6×10^{-7} N/C

Q.23 Two charged spheres A and B are charged with the charges of +10 and +20 coul. respectively and separated by a distance of 80cm. The electric field at a point on the line joining the centres of the two sphers will be zero at a distance from sphere A.

(1) 20 cm   (2) 33 cm   (3) 55 cm   (4) 60 cm.

Q.24 In electric field, a 6.75 charge experiences 2.5 N force, when placed at distance of 5m from the origin. Then potential gradient at this point will be- (in M.K.S.)

(1) 5.71×10^5 (2) 3.71×10^5

(3) 18.81×10^5 (4) 1.881×10^5

Q.25 A small circular ring has a uniform charge distribution. On a far-off axial point distance x from the centre of the ring, the electric field is proportional to-

(1) x^{-1} (2) $x^{-3/2}$

(3) x^{-2} (4) $x^{5/4}$

Q.26 When charge of 3 coulomb is placed in a Uniform electric field , it experiences a force of 3000 newton, within this field, potential difference between two points separated by a distance of 1 cm is-

(1) 10 Volt   (2) 90 Volt   (3) 1000 Volt   (4) 3000 Volt.

Q.27 A uniform electric field having a magnitude E_0 and direction along positive x-axis exists. If the electric potential(V) is zero at x = 0 then its value at x = + x will be-

(1) $V_x = x\,E_0$ (2) $V_x = -x.E_0$

(3) $V_x = x^2\,E_0$ (4) $V_x = x^2\,E_0$

Q.28 The dimensions of potential difference is -

(1) $ML^2T^{-2}Q^{-1}$ (2) $MLT^{-2}Q^{-1}$

(3) $MT^{-2}Q^{-2}$ (4) $ML^2\,T^{-1}\,Q^{-1}$

Q.29 1 e.s.u. of potential is equal to-

(1) 1/300 volt   (2) 8×10^{10} volt

(3) 300 volt   (4) 3 volt

Q.30 The earth's surface is considered to be at -

(1) Zero potential   (2) Negative Potential

(3) Infinite Potential   (4) Positive Potential

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	4	4	3	1	1	4	1	3	1	1
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	2	2	3	1	2	2	1	3	2	1
Que.	21	22	23	24	25	26	27	28	29	30
Ans.	1	2	2	2	3	3	2	1	3	1