A Division of Aggarwal Educare
Aggarwal CLASSES™

Daily Practice Problems

JEE PHYSICS

Topic: Electrostatics II

Q.1 Which of the following charge is not posible :

[1] 1.6×10^{-18} C [2] 1.6×10^{-19} C [3] 1.6×10^{-20} C [4] None of these

Q.2 A body has 80 microcoulomb of charge. Number of additional electrons on it will be :

[1] 8×10^{-5} [2] 80×10^{15} [3] 5×10^{14} [4] 1.28×10^{-17}

Q.3 The electric charge in uniform motion produces -

[1] an electric field only [2] a magnetic field only

[3] both electric and magnetic fields [4] neither electric nor magnetic fields

Q.4 Two identical metallic sphere are charged with 10 and -20 units of charge. If both the spheres are first brought into contact with each other and then are placed to their previous positions, then the ratio of the force in the two situations will be :-

[1] -8 : 1 [2] 1 : 8 [3] -2 : 1 [4] 1 : 2

Q.5 Two equal and like charges when placed 5 cm apart experience a repulsive force of 0.144 newton. The magnitude of the charge in microcoloumb will be :

[1] 0.2 [2] 2 [3] 20 [4] 12

Q.6 Two charges of +1 μC & + 5 μC are placed 4 cm apart, the ratio of the force exerted by both charges on each other will be -

[1] 1 : 1 [2] 1 : 5 [3] 5 : 1 [4] 25 : 1

Q.7 Two infinite linear charges are placed parallel at 0.1 m apart. If each has charge density of 5μ C/m, then the force per unit length of one of linear charges in N/m is :

[1] 2.5 [2] 3.25 [3] 4.5 [4] 7.5

Q.8 Relative permittivity of mica is :

[1] one [2] less than one [3] more then one [4] infinite

Q.9 The dielectric constant for water is -

[1] 1 [2] 40 [3] 81 [4] 0.3

Q.10 If an electron is placed in a uniform electric field, then the electron will :

[1] experience no force.

[2] moving with constant velocity in the direction of the field.

[3] move with constant velocity in the direction opposite to the field.

[4] accelerate in direction opposite to field.

Q.11 If Q = 2 coloumb and force on it is F = 100 newton, then the value of field intensity will be :

[1] 100 N/C [2] 50 N/C [3] 200 N/C [4] 10 N/C

Q.12 A force of 3000 N is acting on a charge of 3 coloumb moving in a uniform electric field. The potential difference between two point at a distance of 1 cm in this field is :

[1] 10V [2] 90V [3] 1000V [4] 9000V

Q.13 The intensity of an electric field at some point distant r from the axis of infinite long pipe having charges per unit length as q wil be :

[1] proportional to r^2 [2] proportional to r^3

[3] inversely proportional to r. [4] inversely proportional to r^2.

Q.14 The electric field intensity due to a uniformly charged sphere is zero :

[1] at the centre [2] at infinity

[3] at the centre and at infinite distance [4] on the surface

Q.15 Total charge on a sphere of radii 10 cm is 1 μC. The maximum electric field due to the sphere in N/C will be -

[1] 9×10^{-5} [2] 9×10^3 [3] 9×10^5 [4] 9×10^{15}

Q.16 A charged water drop of radius 0.1 μm is under equilibrium in some electric field. The charge on the drop is equivalent to electronic charge. The intensity of electric field is ($g = 10\ m/s^2$)-

[1] 1.61 NC^{-1} [2] 26.2 NC^{-1} [3] 262 NC^{-1} [4] 1610 NC^{-1}

Q.17 The distance between two plates is 2 cm, when an electric potential of 10 volt is applied to both the plates, then the value of electric field will be -

[1] 20 N/C [2] 500 N/C [3] 5 N/C [4] 250 N/C

Q.18 The charge density of an insulating infinite surface is (e/π) C/m^2 then the field intensity at a nearby point in volt/meter will be -

[1] 2.88×10^{-12} [2] 2.88×10^{-10} [3] 2.88×10^{-9} [4] 2.88×10^{-19}

Q.19 Two objects A and B are charged with equal charge Q. The potential of A relative to B will be -

[1] more [2] equal [3] less [4] indefinite

Q.20 In electrostatics the potential is equivalent to -

[1] temperature in heat [2] height of levels in liquids

[3] pressure in gases [4] all of the above

Q.21 The potential due to a point charge at distance r is -

[1] proportional to r. [2] inversely proportional to r.

[3] proportional to r^2. [4] inversely proportional to r^2

Q.22 The dimensions of potential difference are -

[1] $ML^2T^{-2}Q^{-1}$ [2] $MLT^{-2}Q^{-1}$ [3] $MT^{-2}Q^{-2}$ [4] $ML^2T^{-1}Q^{-1}$

Q.23 Two parallel plates have charges + Q and - Q, with potential difference V between them. If the distance between the plates is increased then the potential difference will -

[1] decrease [2] increase

[3] be same as before. [4] depend upon the metal of plates

Q.24 An object is charged with positive charge. The potential at that object will be -

[1] positive only [2] negative only

[3] zero always [4] may be positive, negative or zero.

Q.25 An uncharged conductor A is brought close to another charged conductor B, then the charge on B -

[1] will increase but potential will be constant.

[2] will be constant but potential will increase

[3] will be constant but potential decreases.

[4] and the potential both are constant.

Q.26 In H atom, an electron is rotating around the proton in an orbit of radius r. Work done by an electron in moving once around the proton along the orbit will be -

[1] ke/r [2] ke^2/r^2 [3] $2\pi re$ [4] zero

Q.27 Two points (0, a) and (0, -a) have charges q and -q respectively then the electrical potential at origin will be-

[1] zero [2] kq/a [3] kq/2a [4] $kq/4a^2$

Q.28 The potential at 0.5 Å from a proton is -

[1] 0.5 volt [2] 8μ volt [3] 28.8 volt [4] 2 volt

Q.29 A wire of 5 m length carries a steady current. If it has an electric field of 0.2 V/m, the potential difference across the wire in volt will be -

[1] 25 [3] 1.0

[2] 0.04 [4] none of the above

Q.30 A nucleus has a charge of + 50e. A proton is located at a distance of 10^{-12} m. The potential at this point in volt will be -

[1] 14.4×10^4 [2] 7.2×10^4 [3] 7.2×10^{-12} [4] 14.4×10^8

ANSWER KEY

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