**ELECTRIC FILED DUE TO A POINT CHARGE AND ELECTRIC FORCE**

1. A charge *q* is placed at the centre of the line joining two equal charges *Q*. The system of the three charges will be in equilibrium, if  is equal to

(a)  (b)  (c)  (d)

1. ABC is an equilateral triangle. Charges  are placed at each corner. The electric intensity at  will be

(a) 

*+q*

*+q*

*+q*

*r*

*r*

*r*

*A*

*B*

*C*

*O*

(b) 

(c) Zero

(d) 

1. A mass  has a charge . It moves with a velocity of  and enters a region of electric field of in the same direction as the velocity of the mass. The velocity of the mass after 3 seconds in this region is

(a)  (b)  (c)  (d) 

1. Equal charges  are placed at the vertices  and  of an equilateral triangle  of side . The magnitude of electric field at the point  is

(a)  (b)  (c)  (d) 

1. A particle of mass  and charge  is placed at rest in a uniform electric field  and then released. The kinetic energy attained by the particle after moving a distance  is

(a)  (b)  (c)  (d)

1. An electron of mass  initially at rest moves through a certain distance in a uniform electric field in time . A proton of mass  also initially at rest takes time  to move through an equal distance in this uniform electric field. Neglecting the effect of gravity, the ratio of  is nearly equal to

(a) 1 (b)  (c)  (d) 1836

1. Two point charges of  and  are  apart. Where will the electric field strength be zero on the line joining the charges from  charge

(a)  (b)  (c)  (d)

1. In the given figure distance of the point from *A* where the electric field is zero is

80 *cm*

10 *μC*

*A*

*B*

20 *μC*

(a) 20 *cm* (b) 10 *cm* (c) 33 *cm* (d) None of these

1. Infinite charges of magnitude *q* each are lying at *x* =1, 2, 4, 8... *meter* on *X*-axis. The value of intensity of electric field at point *x* = 0 due to these charges will be

(a) 12 × 109*q N/C* (b) Zero (c) 6 × 109*q N/C* (d) 4 × 109*q N/C*

1. Two point charges +8*q*  and  are located at  and  respectively. The location of a point on the *x*-axis at which the net electric field due to these two point charges is zero is

(a) 8 *L*  (b) 4 *L* (c) 2 *L* (d) 

1. Charge  is uniformly distributed over a thin half ring of radius . The electric field at the centre of the ring is

(a)  (b)  (c)  (d) 

1. There is a uniform electric field of strength  along *y*-axis. A body of mass 1*g* and charge 10–6*C* is projected into the field from origin along the positive *x*-axis with a velocity 10*m*/*s*. Its speed in *m*/*s* after 10*s* is (Neglect gravitation)

(a) 10 (b)  (c)  (d) 20

1. Two equal charges are separated by a distance *d*. A third charge placed on a perpendicular bisector at *x* distance will experience maximum coulomb force when

(a)  (b)  (c)  (d)

1. An infinite number of electric charges each equal to 5 *nano-coulomb* (magnitude) are placed along *X*-axis at *cm*, *cm*, *cm* *cm* ………. and so on. In the setup if the consecutive charges have opposite sign, then the electric field in *Newton/Coulomb* at  is 

(a)  (b)  (c)  (d)

1. Two point charges  and  are fixed on the *X*-axis at positions  and  from origin respectively. At what positions on the axis, the resultant electric field is zero

(a) Only  (b) Only 

(c) Both  (d)  only

1. Six charges, three positive and three negative of equal magnitude are to be placed at the vertices of a regular hexagon such that the electric field at *O* is double the electric field when only one positive charge of same magnitude is placed at *R*. Which of the following arrangements of charges is possible for *P*, *Q*, *R*, *S*, *T* and *U* respectively

(a) 

*P*

*Q*

*R*

*U*

*T*

*S*

*O*

(b) 

(c) 

(d) 

1. Four charges equal to – *Q* are placed at the four corners of a square and a charge *q* is at its centre. If the system is in equilibrium the value of *q* is

(a)  (b)  (c)  (d) 

1. In the following four situations charged particles are at equal distance from the origin. Arrange them the magnitude of the net electric field at origin greatest first

2*q*

–3*q*

*X*

*Y*

*O*

5*q*

(i) (ii)

3*q*

–*q*

*O*

*X*

*Y*

2*q*

– *q*

*O*

*X*

*Y*

– 3*q*

4*q*

– 2*q*

*O*

*X*

*Y*

(iii) (iv)

(a) (i) > (ii) > (iii) > (iv) (b) (ii) > (i) > (iii) > (iv)

(c) (i) > (iii) > (ii) > (iv) (d) (iv) > (iii) > (ii) > (i)

1. Five point charge each having magnitude ‘*q*’ are placed at the corner of hexagon as shown in fig. Net electric field at the centre ‘*O*’ is . To get net electric field at ‘*O*’ be , charge placed on the remaining sixth corner should be

*q*

*q*

*q*

*q*

*q*

*O*

(a) 6 *q*

(b) – 6 *q*

(c) 5 *q*

(d) – 5 *q*

1. Two point charge – *q* and +*q/*2 are situated at the origin and at the point (*a*, 0, 0) respectively. The point along the *X-*axis where the electric field vanishes is

(a)  (b) 

(c)  (d) 

**KEY**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **b** | **2** | **c** | **3** | **b** | **4** | **c** | **5** | **c** |
| **6** | **b** | **7** | **c** | **8** | **c** | **9** | **c** | **10** | **b** |
| **11** | **a** | **12** | **c** | **13** | **c** | **14** | **c** | **15** | **b** |
| **16** | **d** | **17** | **b** | **18** | **c** | **19** | **d** | **20** | **c** |