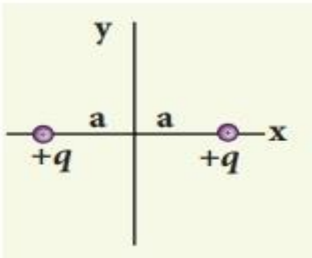
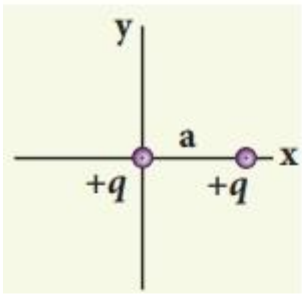
1. The electric dipole moment for the following charge configuration is



a) zero　　b) +qa　　c) –qa　　d) +2qa

2. The electric dipole moment for the following charge configuration is



a) P= 2qa$\hat{\imath}$　　b) P= -qa$\hat{\imath}$　　c) P= qa$\hat{\imath}$　　d) P= 4qa$\hat{\imath}$

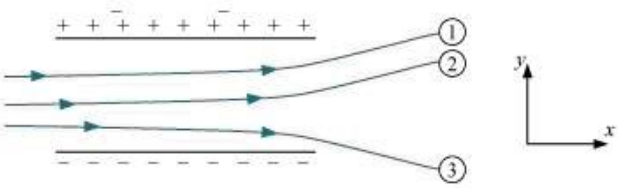
3. A sample of HCl gas is placed in a uniform electric field of magnitude 3×10^4 NC^{-1}. The dipole moment of each HCl molecule is 4×10^{-30} Cm. The maximum torque experienced by each HCl molecule is

a) 10^{26}　　b) 24×10^{-26}　　c) 12×10^{-26}　　d) 36×10^{-26}

4. An electric dipole with dipole moment 4×10^{-9} C m is aligned at 30° with the direction of a uniform electric field of magnitude 5×10^4N C^{-1}. The magnitude of the torque acting on the dipole is

a) 10^{-1} Nm　　b) 10^{-5} Nm　　c) 10^{-2} Nm　　d) 10^{-4} Nm

5. Figure shows tracks of three charged particles in a uniform electrostatic field. Give the signs of the three charges. Which particle has the highest charge to mass ratio?



a) 1　　b) 2　　c) 3　　d) data insufficient

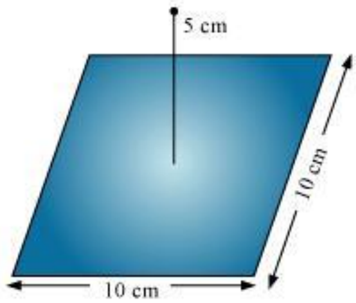
6. The expression for electric dipole moment is

   a) q x 2a b) q x a c) q x 3a d) q x 4a

7. Consider a uniform electric field E = 3 × 10^3 î N/C. What is the flux of this field through a square of 10 cm on a side whose plane is parallel to the yz plane?

   a) 10 N m^2/C b) 20 N m^2/C c) 40 N m^2/C d) 30 N m^2/C

8. A point charge +10 μC is a distance 5 cm directly above the centre of a square of side 10 cm, as shown in Fig. The magnitude of the electric flux through the square is (Hint: Think of the square as one face of a cube with edge 10 cm.)



a)10^5 N m^2 C^{-1} b) 3× 10^5 N m^2 C^{-1} c) 2.88 × 10^5 N m^2 C^{-1} d) 1.88 × 10^5 N m^2 C^{-1}

9. A point charge of 2.0 μC is at the centre of a cubic Gaussian surface 9.0 cm on edge. The net electric flux through the surface is

a)1.26 × 10^5 N m^2 C^{-1} b)2.26 × 10^5 N m^2 C^{-1} c) 3.26 × 10^5 N m^2 C^{-1} d) 4.26 × 10^5 N m^2 C^{-1}

10. A point charge causes an electric flux of −2.0 × 10^3 Nm^2/C to pass through a spherical Gaussian surface of 10.0 cm radius cantered on the charge. If the radius of the Gaussian surface were doubled, then flux passing through the surface is

   a)−2.0 × 10^3 Nm^2/C b) −4.0 × 10^3 Nm^2/C c) −6.0 × 10^3 Nm^2/C d) −1.0 × 10^3 Nm^2/C

11. A uniformly charged conducting sphere of 2 m diameter has a surface charge density of 10 c/m^2. The charge on the sphere is

   a) 30.6 coulomb b) 150.6 coulomb c) 50.6 coulomb d) 125.6 coulomb

12. An infinite line charge produces a field of 9 × 10^4 N/C at a distance of 1m. The linear charge density is

   a) 1 μC/m b) 0.1 μC/m c) 5 μC/m d) 2 μC/m

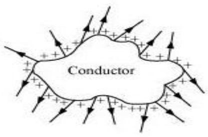
13. Two large, thin metal plates are parallel and close to each other. On their inner faces, the plates have surface charge densities of opposite signs and of magnitude 15.0 × 10^{-22} C/m^2. The electric field E in the outer region of the first plate is

   a)5 N/C b) 10 N/C c) 8 N/C d) zero

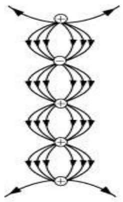
14. Two large, thin metal plates are parallel and close to each other. On their inner faces, the plates have surface charge densities of opposite signs and of magnitude 17.0×10^{-22} C/m^2. The electric field (E) between the plates is

a) 1.92×10^{-10} N/C b) 2.92×10^{-10} N/C c) 3.92×10^{-10} N/C d) 4.92×10^{-10} N/C

15. Which among the curves shown in figures possibly represent electrostatic field lines?



1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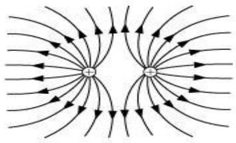
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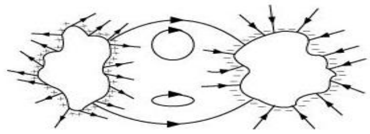
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a) 1 b) 2 c) 3 d) 4

16. The electric flux through an area element ΔS is defined as

a) E. ΔS b) Ex ΔS c) B. ΔS d) E+ ΔS

17. The expression for torque in terms of P, E, ɵ is

a) PE sin (ɵ) b) PE cos (ɵ) c) PE Tan (ɵ) d) PE cot (ɵ)

18. Example for polar molecule is

a) H_2O b) CH_4 c) N_2 d) CO_2

19. Polar molecules having

a) Permanent dipole moment b) weak dipole moment

c)zero dipole moment d) none of the above

20. The expression for electric field at a point on the equatorial plane (for r>> a) is

a) $-\frac{3p}{4\pi\varepsilon_o r^3}$ b) $\frac{2p}{4\pi\varepsilon_o r^3}$ c) $-\frac{4p}{4\pi\varepsilon_o\ r^3}$ d) $-\frac{p}{4\pi\varepsilon_o\ r^3}$

KEY

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