ST. LAWRENCE HIGH SCHOOL

FOR GOD AND COUNTRY

A JESUIT CHRISTIAN MINORITY INSTITUTION

SOLUTION TO WORK SHEET 2

Subject: PHYSICS

Class: XII **Date : 4.5.20**

Chapter : Electrostatics **Topic:Intensity due to dipole: axial,perpendicular,any point.**

Multiple Choice Questions: 1 x 15 = 15

1 What is the angle between the electric dipole moment and the electric field due to it on the axial line?
a)0^0 b) 90^0 c) 180^0 d) none of these

Ans : (a) 0^0

2. Two point charges of 1μC and -1μC are separated by a distance of 100 A^0 .A point P is at a distance of 10 cm from the midpoint and on the perpendicular bisector of the line joining the two charges .The electric field at P will be

a) 9 N/C b) 0.9 V/m c) 90 V/m d) 0.09 N/C

Ans : (d) 0.09 N/C

3. What is the angle between the electric dipole moment and the electric field strength due to it on the equatorial line?
a) 0^0 b) 90^0 c) 180^0 d) none of the above
Ans : (c) 180^0

4. An electric dipole is at the centre of a hollow sphere of radius r. The total normal electric flux through the sphere is (here Q is the charge and d is the distance between the two charges of the dipole)
a) $Q/4\pi r^2$ b) $2Q/4\pi r^2$ c) Q .d d) zeroAns : (d) zero

5. In a non-uniform electric field, electric dipole experiences
a) torque only b) torque as well as net force c) force only d) none of these
Ans : (b) torque as well as net force

6. Electric field of a dipole is related to distance r as
a) E α 1/r b) E α $1/r^3$ c) E α $1/r^2$ d) E α $1/r^4$
Ans : (b) E α $1/r^3$

7. If E_1 be the electric field strength of short dipole at a point of its axial line and E_2 that on the equatorial line at the same distance
a) $E_1 = E_2$ b) $E_1 = 2E_2$ c) $E_2 = 2E_1$ d) none of these
Ans : (b) $E_1 = 2E_2$

8. S.I unit of dipole is
a) C-m b) C/m c) m/C d) 2Cm
Ans: a) C-m

9. Value of $1/4\mu\epsilon_0$ is

a) 9×10^9 N $m^2 C^{-2}$ b) 9×10^{-9} N m^2 C^2 c) 1×10^9 N m C d) 9×10^8 N m^2 C^{-2}

Ans (a) 9×10^9 N m^2 C^{-2}

10. Electric dipole moment is a

a) vector quantity b) scalar quantity c) neither a vector nor a scalar d) physical quantity

Ans : (a) vector quantity

11. An electric dipole consisting of a pair of equal and opposite charges each of magnitude 5μC has dipole moment equal to 5×10^{-7} Cm. Find the length of the dipole.

a) 0.1 m b) 1 m c) 2 m d) 0.2 m

Ans: (a) 0.1 m

12. Two charges of +0.2μμC and -0.2μμC are placed 10^{-6} cm apart . Calculate the electric field at an axial point at a distance of 10 cm from their mid point.

a) 3.6×10^{-8} N/C b) 3.6×10^8 N/C c) 3.6 N/C d) 36 N/C

Ans : (a) 3.6×10^{-8} N/C

13. Two charges of $+ 25 \times 10^{-9}$ C and -25×10^{-9} C are placed 6 m apart. Find the electric field at a point 4 m from the centre of the electric dipole on equatorial line.

a) 10.8 N/C b) 108 N/C c) 118 N/C d) 0 N/C

Ans : (a) 10.8 N/C

14. The charges +q and –q are placed at a separation d. At which points the direction of the resultant electric field will be parallel to the line joining the charges?

a) at all points on the perpendicular bisector of the line joining the charges

b) at all points on the line joining the charges

c) there are no such points

d)at all points making an angle 60^0 with the line joining the charges

Ans :(a) at all points on the perpendicular bisector of the line joining the charges

15. Electric intensity due to an electric dipole varies with distance (r) as $E \alpha r^n$,where n is

a) -3 b) – 2 c) – 1 d) 0

Ans : (a) – 3

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