



# ST. LAWRENCE HIGH SCHOOL

A JESUIT CHRISTIAN MINORITY INSTITUTION



## WORK SHEET 1

### Subject: PHYSICS

**Class: XII**

**Date : 2.5.20**

**Chapter : Electrostatics**

**Topic: Coloumb's Law, Intensity of a point charge, Lines of force**

Multiple Choice Questions:

1x15=15

1. Which of the following statements is not true for Coulomb's law in electrostatics?

- a) the law is applicable only for point charge.
- b) the law is applicable for any distance.
- c) according to this law force between two charges depends on the medium.
- d) it is an inverse square law.

2. Select the correct statement

- a) both of electrostatic force and gravitational force are non conservative forces
- b) electrostatic force is conservative but gravitational force is non conservative.
- c) electrostatic force is non conservative but gravitational force is conservative.
- d) both of electrostatic force and gravitational force are conservative forces.

3. Number of e.s.u of charge in 1C is

- a)  $3 \times 10^{10}$
- b)  $3 \times 10^9$
- c)  $3 \times 10^8$
- d) 1/300

4. Charge  $q_1$  exerts force on another charge  $q_2$ . A third charge  $q_3$  is brought near them. The force applied by  $q_1$  on  $q_2$

- a) will decrease
- b) will increase
- c) will remain the same
- d) will increase if the nature of  $q_1$  and  $q_2$  is the same and will decrease if their nature is opposite

5. Two point charges separated by a distance  $d$  repel each other with a force of 9N. If the separation between them becomes  $3d$ , the force of repulsion will be

- a) 1N
- b) 3N
- c) 6N
- d) 27N

6. Any two electric lines of force never intersect because
- at the point of intersection two tangents can be drawn on two lines
  - two perpendiculars can be drawn on two lines
  - neither tangents nor perpendiculars can be drawn
  - they are always parallel
7. A metal rod of length 10 cm is given a charge  $8 \times 10^{-8}$  C. The linear charge density of the rod will be
- $8 \times 10^{-7}$  C/m
  - $8 \times 10^7$  C/m
  - $8 \times 10^2$  C/m
  - Zero
8. When a metal plate is introduced between two charges kept at some distance from each other, electrostatic force between the two charges will
- decrease
  - increase
  - remain the same
  - zero
9. Two point charges  $+4q$  and  $+q$  are placed 30 cm apart. The electric field intensity at a point on the line joining the two charges is zero. The point is situated at a distance
- 15 cm from  $4q$
  - 20 cm from  $4q$
  - 7.5 cm from  $4q$
  - 5 cm from  $q$
10. A hollow charged sphere of radius 2 m does not produce any field intensity
- at any internal point of the sphere
  - at any external point of the sphere
  - at a distance greater than 2 m
  - at a distance greater than 10 m
11. An electron of charge  $-q$  and mass  $m$  is placed in a uniform electric field of intensity  $E$ . The value of  $E$  is such that the force on the electron due to the electric field is equal to its weight. Under this condition the value of  $E$
- $mg/e$
  - $mge$
  - $e/mg$
  - $eg/m$
12. Due to an electric charge  $Q$ , field intensity at the position of test charge  $q_0$  is  $E$ . If the test charge is replaced by  $-q_0$ , then field intensity becomes
- $-q_0E$
  - $-E/q_0$
  - 0
  - $E$
13. If  $E$  be the intensity of the electric field at a distance  $r$  ( $r > R$ ) due to a uniformly charged spherical shell, then
- $E \propto r$
  - $E \propto 1/r$
  - $E \propto r^2$
  - $E \propto 1/r^2$
14. The intensity of the electric field is  $E \text{ Vm}^{-1}$ . Force in N on a charge  $q$  coulomb placed in the field is
- $E/q$
  - $Eq$
  - $q/E$
  - $2Eq$
15. The coulomb force between two charges depends on which property of the medium?
- magnetic permeability
  - electric permittivity
  - refractive index
  - density

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