

**SUBJECT: PHYSICS**

**CLASS: 2<sup>ND</sup> YEAR**

**CHAPTER: 12-ELECTROSTATICS**

**MARKS: 30**

**NOTE: ALL QUESTIONS ARE COMPULSARY**

**Q.No.1: Encircle the correct answer.**

**(06)**

1. Lightening in the clouds is an example of  
(a) electrodynamics      (b) electrostatics      (c) magnetism      (d) Electromagnetism
2. Relative permittivity for water (distilled) is:  
(a) 1.0006      (b) 88.5      (c) 78.5      (d) 2.1
3. The value of relative permittivity for all the dielectrics other than air or vacuum is always:  
(a) Less than unity      (b) Greater than unity      (c) equal to unity      (d) Zero
4. Electric intensity between the middle of two equal and similar charges is:  
(a) Zero      (b) Infinite      (c) E      (d) 2E
5. The dielectric constant of metals is:  
(a) Infinite      (b) Greater than 1      (c) Zero      (d) 1
6. Electric potential of earth is taken to be zero because earth is a good:  
(a) Dielectric      (b) Semiconductor      (c) Insulator      (d) conductor

**Q.No.1: Give answer of the following questions.**

**(8×2=16)**

1. How electric dipoles are formed in a dielectric when placed b/w the plates of capacitor? Justify your answer
2. Write the similarities & differences between gravitational and coulomb force
3. What is potential gradient? Prove that electric field intensity is equal to negative of potential gradient
4. If a point charge  $q$  of mass  $m$  is released in a non-uniform electric field with field lines pointing in the same direction, will it make a rectilinear motion?
5. Potential is constant throughout a given region of space. Is the electrical field zero or non-zero in this region? Explain
6. The electronic flash attachment for a camera contains a capacitor for storing the energy used to produce flash. In one such unit, the potential difference between the plates of  $750 \mu\text{F}$  capacitor is  $330\text{v}$ . Determine the energy that is used to produce the flash
7. Draw a graph between  $(q-t)$  for charging and discharging of a capacitor in case of R-C circuit
8. Show that newton/coulomb = volt/meter

**Q.No.3: Give answer of the following questions.**

**(1+4+3=08)**

- a) Define Electric Potential. Calculate electric Potential at a point due to Point charge.
- b) Two-point charges,  $q_1 = -1.0 \times 10^{-6} \text{C}$  &  $q_2 = 4.0 \times 10^{-6} \text{C}$ , are separated by a distance of  $3.0 \text{m}$ . Find & justify the Zero field location