

KCP SIDDHARTHA ADARSH RESIDENTIAL PUBLIC SCHOOL

Kanuru, Vijayawada – 520 007

UNIT TEST - 2

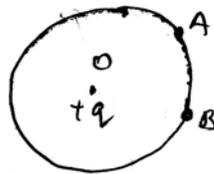
Class : XII
Sub : Physics

Marks : 30
Time : 1 ½ Hr

General Instructions:

1. Answer all the questions.
2. Questions 1 to 5 carry 1 mark each, questions 6 to 8 carry 2 marks each, questions 9 to 11 carry 3 marks each, questions 12 & 13 carry 5 marks each.

1. Explain why two electric field lines never cross each other at any point?
2. What meaning would you give to the capacity of a single conductor?
3. Draw lines of force to represent uniform electric field?
4. An electric dipole of dipole moment $20 \times 10^{-6} \text{ C}$ is enclosed by closed surface. What is the net electric flux coming out of this surface?
5. What should be the work done if a point charge $+q$ is taken from a point A to the point B on the circumference drawn with another point $+q$ at the centre?



6. A man in an insulated metallic cage does not receive a shock, even when the cage is connected to a high voltage source. Why?
7. Draw the electric field lines due to a uniformly charged thin spherical shell when charge on the shell is (i) positive and (ii) negative.
8. Find the electrostatic potential at equatorial point of an electric dipole.
9. Find the electric field intensity on the axial line due to a dipole?
10. What is a capacitor? Find out the energy stored in a capacitor?
11. The electrostatic force on a small sphere of charge $0.4 \mu\text{C}$ due to another small sphere of charge $- 0.8 \mu\text{C}$ in air is 0.2 N.
 - (a) What is the distance between the two spheres?
 - (b) What is the force on the second sphere due to the first?
12. Using Gauss theorem, derive the expression for the electric field intensity at a point outside and at a point inside a uniformly charged thin spherical shell of radius R and surface charge density $\sigma \text{ C/m}^2$.

(or)

State Gauss theorem in electrostatics. Apply Gauss theorem to find the electric field strength near an infinite plane sheet.

13. Describe the construction and working of a Van de Graff generator with the help of a labeled diagram.

(or)

Derive potential energy of an electric dipole placed in an uniform electric field?