CBSE Board	**PARISHRAM PUBLICATIONS** **PUNE** **NAME of Student : _____** **Subject : Physics** **Class : XII** **Topic :- Electrostatic Potential & Capacitance Max. Marks :- 25**	

SECTION – A (3 Marks)

1. Write the expression for potential due to an electric dipole at a point on its axis.

2. A spherical conductor of radius 10 mm is charged to potential 10 V at its surface. What will be the potential at the centre of the sphere?

3. What is the work done in bringing a charge $q\left(q = 2\mu\mathbf{C}\right)$ from infinity to a point on the equatorial plane of a dipole? The dipole consists of $5\mu C$ charge separated by a distance of $8\mu m$.

SECTION – B (6 Marks)

4. Derive the expression for potential energy of a dipole in an external field.

5. Explain electrostatics shielding with help of diagrams.

6. Derive an expression to show the effect of dielectric on capacitance of capacitor.

SECTION – C (6 Marks)

7. Derive the expression for equivalent capacitance of capacitors connected in
a] series b] parallel. (Take example of 3 capacitors in each case)

8. Derive the expression for energy stored in a capacitor.

SECTION – D (10 Marks)

9. A spherical conductor of radius 12 cm has a charge of 1.6×10^{-7} C distributed uniformly on its surface. What is the electric field and electric potential.
a] inside the sphere b] just outside the sphere
c] at a point 18 cm from the centre of the sphere?

10. In a parallel plate capacitor with air between the plates, each plate has an area of $6 \times 10^{-3} m^2$ and the distance between the plates is 3 mm. Calculate the capacitance of the capacitor. If this capacitance is connected to a 100 v supply, what is the charge on each plate of the capacitor?
If instead of air glass of dielectric constant K = 3 were inserted then what would be the capacitance and charge?