Total 20 Marks

1) *How many electrons are there in one coulomb of negative* Charge.   2 marks

2) Find the dimensions and units of ε_0.   1 marks

3) What are equipotential Surfaces?   1 marks

4) Determine the magnitude of the two identical charges, when the electrostatic force between these two identical charges is 1000 N and are separated by a distance of 0.1 m.   2 marks

5) A charge $q = -2.0\,\mu C$ is placed at origin. Find the electric field at (3 m, 4 m, 0).   2 marks

6) Determine the electric field strength vector if the potential of this field depends on x, y coordinates as   2 marks
(a) $V = a\,(x^2 - y^2)$ (b) $V = axy$
where, a is a constant.

7) Define Dipole moment.   2 marks
Given a charge of $+2\,C$ and $-3\,C$ separated by a distance of $4\,m$, what is the dipole moment?

8) Define Electric field. Write the formula and SI unit. Also draw electric field for positive and negative charge.   2 marks

9) If two charges of $+2\mu C$ and $-4\mu C$ are separated by 0.2m, what is the electric field strength at the midpoint between them?   2 marks

10) Derive electric field due to dipole at any axial position P.   4 marks