# Exercises on Electric potential

**Question (1):**

(a) Find the potential at a distance of 3 cm from a proton.

(b) What is the potential difference between two points that are 1cm and 2 cm from a proton? ( $k_e = 9 \times 10^9\ Nm^2/C^2$) ( e = 1.6 x10-$^{19}$ C)

**Question (2):**

Two point charges $Q_1$ = + 5 n C and $Q_2$ = - 3 n C are separated by 50 cm.

(a) What is the potential energy of the pair?

(b) What is the electric potential at a point midway between the charges?

**Question (3):**

How much work is required to move a charge of 4 n C from a point 2m away to a point 0.5 m away from a point charge of 60 n C? What is the potential difference between these points?

**Question (4):**

The difference in potential between the accelerating plates in the electron gun of a TV picture tube is about 25 000 V. If the distance between these plates is 1.50 cm, what is the magnitude of the uniform electric field in this region?

**Question (5):**

Suppose an electron is released from rest in a uniform electric field whose magnitude is $5.90 \times 10^3$ V/m. (a) Through what potential difference will it have passed after moving 1.00 cm? (b) How fast will the electron be moving after it has travelled 1.00 cm?

**Question (6):**

At a certain distance from a point charge, the magnitude of the electric field is 500 V/m and the electric potential is - 3.00 kV. (a) What is the distance to the charge? (b) What is the magnitude of the charge?

**Question (7):**

The three charges in the following Figure are at the vertices of an isosceles triangle. Calculate the electric potential at the midpoint of the base, taking q = 7.00 µC.