Chapter 25    Electric Potential

25-1    Electric Potential Energy

Question 554
In figure (4), an electron moves from point 'I' to point 'F' in a uniform electric field directed as shown in the figure.
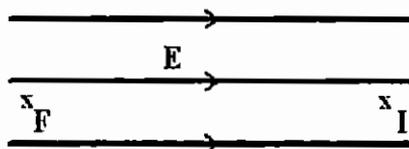


Figure 4

(a)    An external force is required to move the electron from I to F.
(b)    The electron moves to a lower potential.
(c)    The electric potential energy of the electron increases.
(d)    The electric field does negative work on the electron.
(e)    The electric field does positive work on the electron.

Question 555
A particle, of mass m and charge q, is released from rest at point A in a uniform electric field, see figure (2). The kinetic energy, due to the electric field, it attains after moving a distance y is:
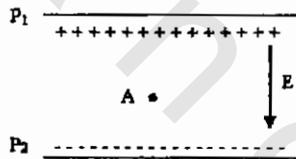


Figure (2)

(a)    E*y.
(b)    q*E*y/2.
(c)    q*E*y.
(d)    q*E*y**2.
(e)    m*q*E*y.

Question 556
Two oppositely charged parallel plates, 0.02 m apart, produce a uniform electric field between the plates. The potential energy U(J) of an electron in the field varies with displacement x(m) from one of the plates as shown in figure 5. What is the magnitude of the force on the electron?
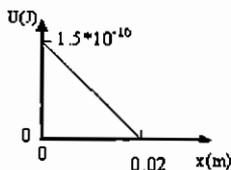


Figure 5

(a)    1.5*10**(-15) N.
(b)    3.0*10**(-18) N.
(c)    zero.
(d)    6.0*10**(-20) N.
(e)    7.5*10**(-15) N.