Chapter 24

Term083

Q9. A proton with a speed of 2.00 x 10^5 m/s enters a region of space in which source charges have created an electric potential. What is the proton's speed after it has moved through a potential difference of + 100 V?

A) 1.44 x 10^5 m/s

Q10. The electric potential at points in xy plane is given by V= $2x^2y+32$. What is the electric field at (2.0 m, 3.0 m)

A) -24 **i**-8.0 **j**

Q11. Four equal positive charges, each 3.2 μC, are held at the four corners of a square of edge 0.50 m. How much work is required to move one of those charges far away from other three?

A) − 0.50 J

Q12. An electric field of 100 V/m strength is often observed near the surface of earth. What would be the electric potential at a point on the earth surface? (Radius of Earth= 6.37 x 10^6 m)

A) 6.37 x 10^8 V

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Q10. A proton is released from rest in a uniform electric field of magnitude 8.0×10^4 V/m directed along the positive x-axis. The proton undergoes a displacement of 0.50 m along the direction of the field. Calculate the change in the potential energy of the proton.

A) − 40 keV

Q11. Consider two concentric conducting thin spherical shells. The first one has a radius R1 = 10.0 cm and carries a charge Q1 = +5.00 μC and the second shell has a radius R2 = 20.0 cm and carries a charge Q2 = −10.0 μC. Calculate the potential at a distance of 10.0 cm from the

center of the shells. Take the potential to be zero at infinity.
A) Zero

Q12. A particle of charge 3.1 μC is fixed at point P, and a second particle of mass m = 2.0×10^{-5} kg and same charge is initially held a distance r1 = 0.90 mm from P. The second particle is then released from rest. Determine its speed when it is at a distance r2 = 2.5 mm from P.
A) 2.5 km/s

Q13. In a certain situation, the electric potential varies along an x axis as shown in figure 5 Rank the three regions, shown in the figure, according the magnitude of the x-component of the electric field within them greatest first.
A) 1, 3, then 2