

Question 56125-02  
55-57%

Consider two points A and B in an electric field. A charged particle with a charge of  $-8.0$  micro-Coulomb is released from rest at point A. At point B, the kinetic energy of the particle is  $4.8$  J. what is the electric potential difference  $V_B - V_A$  ?

- (a)  $-480$  kV
- (b)  $-600$  kV
- (c)  $+600$  kV
- (d)  $+125$  kV
- (e)  $+480$  kV

Question 56225-02  
43-62%

An electrons are accelerated by a potential difference of  $2000$  Volts. If this potential difference is increased to  $8000$  Volts, the speed of the electron will be increased by a factor of

- (a) 2
- (b) 8
- (c) 1.5
- (d) 3
- (e) 4

**25-3 Equipotential Surfaces**

25-03

Question 563

Which one of the following statements is TRUE?

- (a) The electric field lines are always perpendicular to the associated equipotential surfaces.
- (b) The magnitude of the electric flux through a surface enclosing a charge depends on the size and shape of the surface.
- (c) If the electric potentials at points A and B are different, then the electric field strength at A and B must be different.
- (d) For a spherically symmetric charge distribution, the equipotentials nearby the charge are parallel planes.
- (e) The electric flux through an equipotential surface is always zero.

25-03

Question 564

Which one of the following statements is FALSE:

- (a) The electric field of a charged conducting sphere is constant for distances larger than the radius of the sphere.
- (b) The electric field due to a uniformly charged infinite flat sheet is independent of distance from the sheet.
- (c) On irregularly shaped conductor, the charge density is higher at the sharp edges.
- (d) The flux through a closed surface is proportional to the charge enclosed by the surface.
- (e) The electric field inside a charged conductor in electrostatic equilibrium is zero.

25-03

Question 565

A  $2$  meters conducting rod is fixed perpendicularly to a uniform  $200$  N/C electric field. The potential difference between its ends is:

- (a)  $400$  Volts.
- (b) Zero.
- (c)  $300$  Volts.
- (d)  $-400$  Volts.
- (e)  $150$  Volts.

25-03

Question 566

A charge  $q$  is located at the center of a circle with a large radius  $R$ , see figure 4. Another charge  $Q$  is located on the circumference of the circle at the  $x$ -axis. What is the work, in Joules, needed to move  $Q$  from its location  $F$ , on the  $x$ -axis, along the circumference?

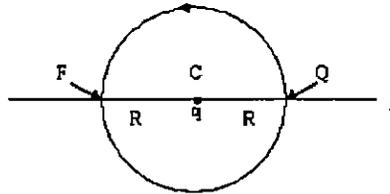


FIGURE 4

- (a)  $2 \cdot k \cdot q \cdot Q / R$ .  
 (b)  $k \cdot q \cdot Q / (2 \cdot R)$ .  
 (c) Zero.  
 (d)  $k \cdot q / (2R)$ .  
 (e)  $k \cdot q \cdot Q / R$ .

25-03

0.41-55%

Question 567

Consider the parallel conducting plates shown in figure 1. The distance between the equipotential surfaces A and B is 1.00 cm and the electric potential on surface A is -280 V. What is the electric potential on the equipotential surface B?

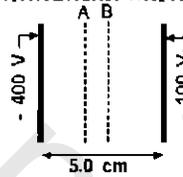


Figure 1

- (a) -160 V  
 (b) -150 V  
 (c) -440 V  
 (d) -220 V  
 (e) -340 V

25-03

0.46-51%

Question 568

Which one of the following statements is true?

- (a) The electric field lines are perpendicular to the equipotential surfaces.  
 (b) Any two equipotential surfaces are always parallel.  
 (c) The electric field is a scalar quantity.  
 (d) We have to do work to move a charged particle along an equipotential surface.  
 (e) The electric potential is a vector quantity.

25-03

0.37-49%

Question 569

A metallic sphere, in electrostatic equilibrium, has a radius  $R$  and carries a net charge  $Q$ .

Which of the following statements are true for the sphere?

- i- It is made of a non-conducting material.  
 ii- The excess charge resides on its surface.  
 iii- The electric field inside it is zero.  
 iv- The electric potential inside it is constant.
- (a) i, ii, and iii only.  
 (b) i and ii only.  
 (c) ii, iii, and iv only.  
 (d) i, ii, and iv only.  
 (e) iii, and iv only.