




Grade

 **10.00 out of 10.00 (100%)**

Question 1

Complete

Mark 1.00 out of 1.00

A $20\text{-}\mu\text{F}$ capacitor charged to 2.0 kV and a $40\text{-}\mu\text{F}$ capacitor charged to 3.0 kV are connected to each other, with the positive plate of each connected to the negative plate of the other. What is the final charge on the $20\text{-}\mu\text{F}$ capacitor after the two are so connected?

- ☐ 40 mC
- ☒ 27 mC
- ☐ 39 mC
- ☐ 80 mC
- ☐ 53 mC

The correct answer is: **27 mC**

Question 2

Complete

Mark 1.00 out of 1.00

Charge of uniform density 90 nC/m^3 is distributed throughout the inside of a long non-conducting cylindrical rod (radius = 2.0 cm). Determine the magnitude of the potential difference of point A (2.0 cm from the axis of the rod) and point B (4.0 cm from the axis).

- ☐ 1.9 V
- ☐ 2.2 V
- ☐ 2.8 V
- ☐ 4.0 V
- ☒ 1.4 V

The correct answer is: **1.4 V**

Question 3

Complete

Mark 1.00 out of 1.00

Three identical point charges ($+2.0 \text{ nC}$) are placed at the corners of an equilateral triangle with sides of 2.0-m length. If the electric potential is taken to be zero at infinity, what is the potential at the midpoint of any one of the sides of the triangle?

☒ 46 V

☐ 70 V

☐ 44 V

☐ 16 V

☐ 10 V

The correct answer is: **46 V**

Question 4

Complete

Mark 1.00 out of 1.00

A $30\text{-}\mu\text{F}$ capacitor is charged to 80 V and then connected across an initially uncharged capacitor of unknown capacitance C . If the final potential difference across the $30\text{-}\mu\text{F}$ capacitor is 20 V , determine C .

- ☐ $45\text{ }\mu\text{F}$
- ☐ $75\text{ }\mu\text{F}$
- ☐ $60\text{ }\mu\text{F}$
- ☐ $24\text{ }\mu\text{F}$
- ☒ $90\text{ }\mu\text{F}$

The correct answer is: **$90\text{ }\mu\text{F}$**

Question 5

Complete

Mark 1.00 out of 1.00

A charged particle ($q = -8.0 \text{ mC}$), which moves in a region where the only force acting on the particle is an electric force, is released from rest at point A. At point B the kinetic energy of the particle is equal to 4.8 J. What is the electric potential difference $V_B - V_A$?

- ☐ +0.48 kV
- ☐ +0.80 kV
- ☐ -0.60 kV
- ☐ -0.80 kV
- ☒ +0.60 kV

The correct answer is: **+0.60 kV**

Question 6

Complete

Mark 1.00 out of 1.00

A particle (mass = 6.7×10^{-27} kg, charge = 3.2×10^{-19} C) moves along the positive x axis with a speed of 4.8×10^5 m/s. It enters a region of uniform electric field parallel to its motion and comes to rest after moving 2.0 m into the field. What is the magnitude of the electric field?

- ☐ 2.4 kN/C
- ☒ 1.2 kN/C
- ☐ 2.0 kN/C
- ☐ 1.5 kN/C
- ☐ 3.5 kN/C

The correct answer is: **1.2 kN/C**

Question 7

Complete

Mark 1.00 out of 1.00

Through what potential difference must an electron (starting from rest) be accelerated if it is to reach a speed of 3.0×10^7 m/s?

- ☐ 7.1 kV
- ☒ 2.6 kV
- ☐ 5.8 kV
- ☐ 8.6 kV
- ☐ 5.1 kV

The correct answer is: **2.6 kV**

Question 8

Complete

Mark 1.00 out of 1.00

When a capacitor has a charge of magnitude $80 \mu\text{C}$ on each plate the potential difference across the plates is 16 V . How much energy is stored in this capacitor when the potential difference across its plates is 42 V ?

- ☐ 3.2 mJ
- ☐ 1.7 mJ
- ☐ 1.0 mJ
- ☐ 1.4 mJ
- ☒ 4.4 mJ

The correct answer is: **4.4 mJ**

Question 9

Complete

Mark 1.00 out of 1.00

A charge Q is uniformly distributed along the x axis from $x = a$ to $x = b$. If $Q = 45 \text{ nC}$, $a = -3.0 \text{ m}$, and $b = 2.0 \text{ m}$, what is the electric potential (relative to zero at infinity) at the point, $x = 8.0 \text{ m}$, on the x axis?

☒ 49 V

☐ 150 V

☐ 60 V

☐ 71 V

☐ 82 V

The correct answer is: **49 V**

Question 10

Complete

Mark 1.00 out of 1.00

A 15- μF capacitor and a 30- μF capacitor are connected in series, and charged to a potential difference of 50 V. What is the resulting charge on the 30- μF capacitor?

- ☐ 0.6 mC
- ☐ 0.8 mC
- ☒ 0.5 mC
- ☐ 0.7 mC
- ☐ 0.4 mC

The correct answer is: **0.5 mC**


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