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← PHYS 1260, section 001, Fall 2020

Exam 1 (1260) (Exam)

 INSTRUCTOR

Joel DeWitt
East Carolina University

Current Score

QUESTION

1	2	3	4	5	6	7	8	9	10
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Due Date

TUE, OCT 13, 2020
1:15 PM EDT



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Description



Assignment Submission & Scoring

Assignment Submission

For this assignment, you submit answers by question parts. The number of submissions remaining for each question part only changes if you submit or change the answer.

Assignment Scoring

Your last submission is used for your score.

1.

DETAILS

COLFUNPHYS1 17.P.006.

MY NOTES

ASK YOUR TEACHER

Find the force on a negative charge that is placed midway between two equal positive charges. All charges have the same magnitude.

0 N

2.

DETAILS

COLFUNPHYS1 18.P.001.

MY NOTES

ASK YOUR TEACHER

The potential at point P in an electric field is 543 V. (Let's denote the electric potential energy as U_E .)

(a) What is the electrical potential energy of a proton placed at P, in eV and in joules?

$U_E =$ -543 eV

$U_E =$ -8.7e-17 J

(b) What is the electrical potential energy of an electron at P, in eV and in joules?

$U_E =$ 543 eV

$U_E =$ 8.7e-17 J

3.

DETAILS

COLFUNPHYS1 19.P.003.

MY NOTES

ASK YOUR TEACHER

A copper wire carries a current of 24.8 A. How many electrons pass a point in the wire in 7 hour?

3.906e24

4.

DETAILS

COLFUNPHYS1 17.P.008.

MY NOTES

ASK YOUR TEACHER

Three charges, $q_1 = +1.88 \times 10^{-9} \text{ C}$, $q_2 = -3.06 \times 10^{-9} \text{ C}$, and $q_3 = +1.07 \times 10^{-9} \text{ C}$, are located on the x-axis at $x_1 = 0$, $x_2 = 10.0 \text{ cm}$, and $x_3 = 20.0 \text{ cm}$. Find the resultant force on q_3 .

magnitude direction

5.

DETAILS

COLFUNPHYS1 18.P.002.

MY NOTES

ASK YOUR TEACHER

A proton is initially at rest at a point where the potential is 466 V . Some time later the proton is at a point where the potential is 199 V . If no force other than the electrostatic force acts on the proton, what is its final kinetic energy?

6.

DETAILS

COLFUNPHYS1 19.P.004.

MY NOTES

ASK YOUR TEACHER

In what appears to be a single lightning bolt, there are typically several distinct strokes over the same path, each lasting on the order of 10^{-4} s , with an interval of about 0.05 s between them. The duration of the several strokes is about 0.20 s . Thus, although the peak current may reach a maximum of $20,000 \text{ A}$, the average current over the 0.20 s is much less—typically about 120 A upward. Find the charge transferred to one point on the earth's surface during a typical 0.20 s discharge.

7.

DETAILS

COLFUNPHYS1 17.P.013.

MY NOTES

ASK YOUR TEACHER

A charge q_1 on the y -axis produces a field of magnitude 7 N/C at the origin, and a charge q_2 on the x -axis produces a field of magnitude 10 N/C at the origin. What is the magnitude of the total field at the origin?

8.

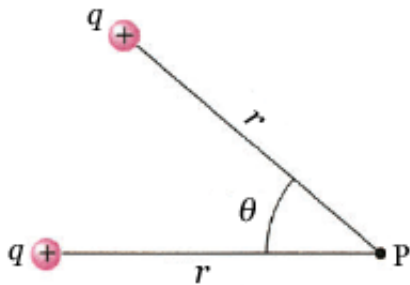
DETAILS

COLFUNPHYS1 18.P.006.

MY NOTES

ASK YOUR TEACHER

Two identical charges $q = (1/9.0) \times 10^{-9} \text{ C}$ are shown in the figure below. Find the potential at P. (Take $r = 1.77 \text{ m}$ and $\theta = 42^\circ$.)



9.

DETAILS

COLFUNPHYS1 19.P.006.

MY NOTES

ASK YOUR TEACHER

There is a potential difference of 1.1 V between the ends of a 20 cm long graphite rod that has a cross-sectional area of 1.2 mm^2 . The resistivity of graphite is $7.5 \times 10^{-6}\ \Omega\cdot\text{m}$.

(a) Find the resistance of the rod.

(b) Find the current.

(c) Find the electric field inside the rod.

10.

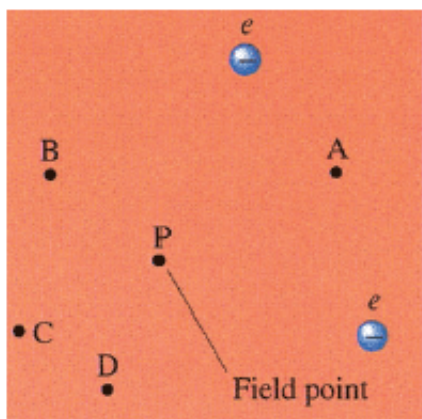
DETAILS

COLFUNPHYS1 17.P.016.

MY NOTES

ASK YOUR TEACHER

In the figure shown below, two electrons are the same distance from a field point P. At which of the points A, B, C, or D could a proton be placed so that the electric field at P is zero?



☒ A

☐ B

☐ C

☐ D

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