

Course No: *Eng1307*
Course Title: *Physics II*
Date: *15/09/2014*
No. of Questions: *(7)*
Time: *2:00 hours*
Using Calculator: *(Yes)*

University of Palestine



final Exam
2013/2014
Total Grade:80

Instructor Name: *Dr. Loai Afana*
Student No.: _____
Student Name: _____
College Name: _____
Dep. / Specialist: _____
Using Dictionary: *(No)*

Question 1:**(10)**

Tow charges q_1 and q_2 , its sum is $5 \cdot 10^{-5} C$.
The electric force Between them is $F=1N$ and the distance is $r = 2m$.
Find q_1 and q_2 .

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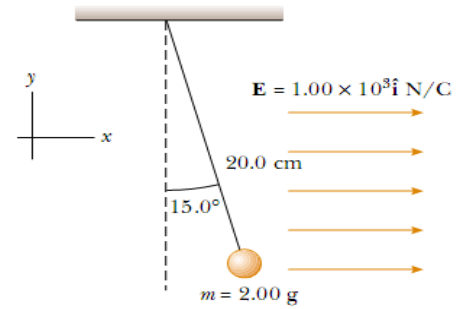
Question 2:

(12)

A small 2.00g ball is suspended by a long string in a uniform electric field $E=1 \times 10^3 \text{ N/C}$ as shown in Figure.

If the ball is in equilibrium when the string makes a 15.0° angle with the vertical,

- (I) Draw free-body diagrams for charge.
- (II) What is the net charge on the ball?



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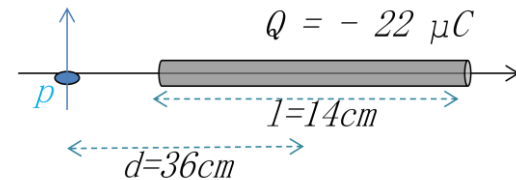
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Question 3:

(12)

A rod of length $l=14\text{cm}$ has a uniform negative charge per unit length λ and a total charge $Q=-22\mu\text{C}$. Calculate the electric field and direction at a point P that is located along the long axis of the rod and a distance $d=36\text{cm}$ from the center of the rod.



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Question 4:

(12)

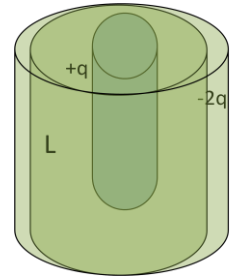
Consider a solid conducting cylinder of out surface charge $+q$ surrounded by another conducting cylinder of net charge $-2q$

A) Find the charge distribution of the outer cylinder.

Using Gauss's law :

b) Find the electric field out of the system and show the direction,

c) Find the electric field between the two cylindrical and show the direction.



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Question 5:

(10)

Tow capacitors when connected in parallel give an equivalent capacitance of $9\mu\text{F}$,
And give an equivalent capacitance of $2\mu\text{F}$ when connected in series.
What is the capacitance of each capacitor?

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Question 6:

(12)

Calculate the cost of using a machine for 4 h , if it operates continuously at 10A , and 240V .
Assume the cost of energy is $0.050\text{ \$/kWh}$

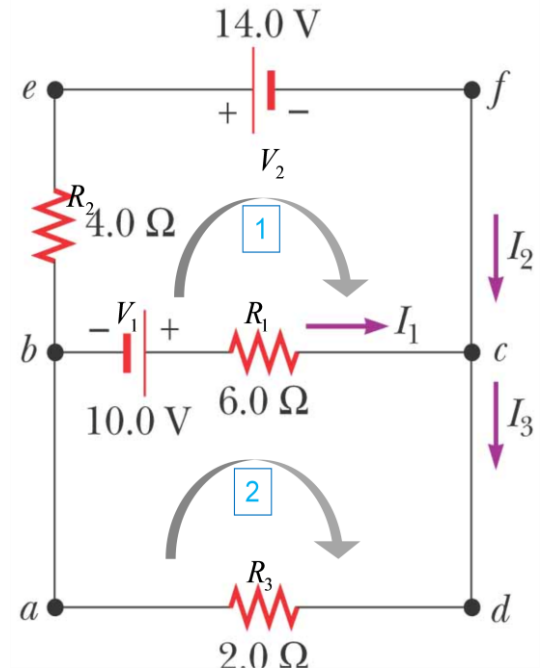


Question 7:

(12)

In the following electrical circuit:

- 1- Find all three currents,
- 2- Find the voltage for resistance R3,
- 3- What power is delivered to resistor R1.



End of Questions

Note: $k = 9 \cdot 10^9$, $\epsilon_0 = 9 \cdot 10^{-12}$