

Course No: *Eng1307*  
Course Title: *Physics II*  
Date: *24-05-2014*  
No. of Questions: *(6)*  
Time: *2:00 hours*  
Using Calculator: *(Yes)*

University of Palestine



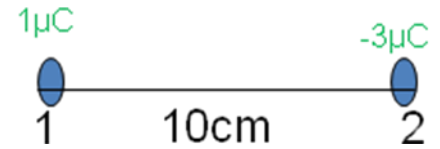
Total Grade:60

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

**Question 1:**

**(10/60)**

Two fixed charges,  $1\mu C$  and  $-3\mu C$  are separated by  $0.1m$  as shown in figure:  
Where may a third positive charge be located so that no electric force acts on it?

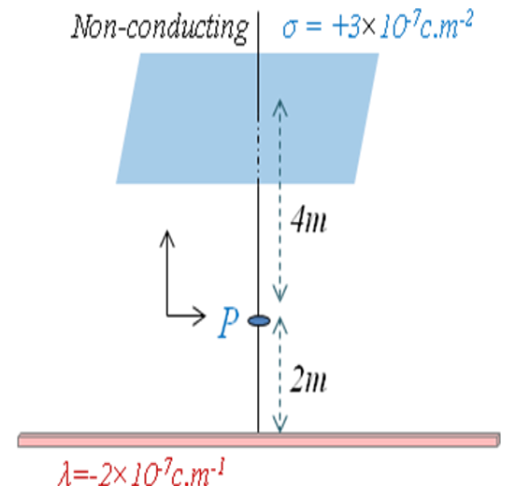




Question 2:

(10/60)

- 1- A non conducting plate with positive charge  $\sigma = +3 \times 10^{-7} \text{ C.m}^{-2}$ .  
Find the electric field at point P that located on the y-axis at distance 4m.
- 2- A rod of negative charge per unit Length  $\lambda = -2 \times 10^{-7} \text{ C.m}^{-1}$   
Find the electric field at point P that located on the y-axis at distance 2m.
- 3- Find the net electric field (*magnitude and direction*) at point P.



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**Question 3:**

**(10/60)**

A proton is released from rest in a uniform electric field that has a magnitude of  $8 \times 10^4 \text{ V/m}$ .

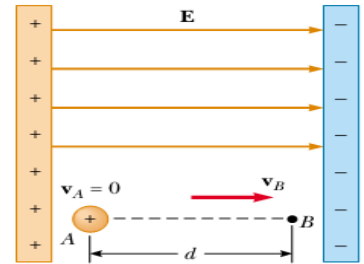
The proton undergoes displacement of 0.50m in the direction of E.

A- Find the change in electric potential ( $\Delta V$ ) between points A and B.

B- Find the change in potential energy ( $\Delta PE$ ) of the proton-field system for this displacement.

C- Find the speed of the proton after completing the 0.50m displacement in the electric field.

Note:  $q_p = +1.6 \times 10^{-19} \text{ C}$ ,  $m_p = 1.67 \times 10^{-27} \text{ kg}$ .



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**Question 4:****(10/60)**

How many capacity of  $1\mu F$  must reach in parallel,  
So they can be charge  $1Coulomb$  if  $300V$  voltage difference?

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**Question 5:**

**(10/60)**

The current in a loop circuit that has a resistance of  $R_1$  is  $2A$ .

The current is reduced to  $1.6A$  when an additional resistor  $R_2=3\Omega$  is added in series with  $R_1$ .

1-What is the value of  $R_1$ ?

2- Find the terminal voltage of the battery.

3- Find the power delivered by the battery if an internal resistance  $0.2 \Omega$

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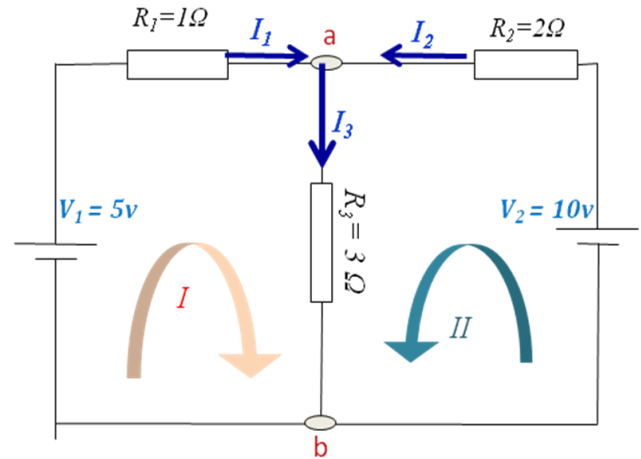
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**Question 6:**

**(10/60)**

Using Kirchhoff's rules find the current and the voltage for each resistance in the following circuit.



End of Questions