

Course No: *Eng1307*  
Course Title: *Physics II*  
Date: *26/11/2014*  
No. of Questions: *(4)*  
Time: *1:30 hours*  
Using Calculator: *(Yes)*

University of Palestine



final Exam  
2014/2015  
Total Grade:20

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

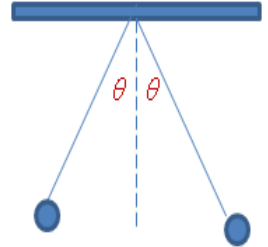
### Question 1:

(5)

Two identical negative charged spheres, each having a mass of  $3.0 \times 10^{-2}$  kg, hang in equilibrium. The length of each string is 0.15 m, and the angle  $\theta = 5.0^\circ$ .

1-Draw free-body diagrams of left charge.

2- Find the magnitude of the charge on each sphere.



Course No: *Eng1307*  
Course Title: *Physics II*  
Date: *26/11/2014*  
No. of Questions: *(4)*  
Time: *1:30 hours*  
Using Calculator: *(Yes)*

University of Palestine



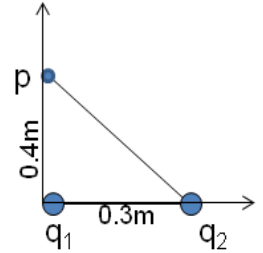
final Exam  
2014/2015  
Total Grade:20

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

**Question 2:**

**(5)**

Charge  $q_1 = +7.00 \mu\text{C}$  is at the origin, and charge  $q_2 = -10.00 \mu\text{C}$  is  $0.300 \text{ m}$  from the origin on the x axis, Find the electric field at point P, which has coordinates  $(0, 0.4) \text{ m}$ .



Course No: *Eng1307*  
Course Title: *Physics II*  
Date: *26/11/2014*  
No. of Questions: *(4)*  
Time: *1:30 hours*  
Using Calculator: *(Yes)*

University of Palestine



final Exam  
2014/2015  
Total Grade:20

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

---

---

### Question 3:

(4)

A uniform electric field  $E= 4 \times 10^3$  N/C exists in the region between two oppositely charged parallel plates. An electron is released from rest at the surface of the negatively charged plate and strikes the surface of the opposite plate  $2 \times 10^{-8}$  s later. what is the separation between the plates?  
*Note:  $q_{electron} = 1.6 \times 10^{-19}$  C.,  $m_{electron} = 9.11 \times 10^{-31}$  kg .*

Course No: *Eng1307*  
Course Title: *Physics II*  
Date: *26/11/2014*  
No. of Questions: *(4)*  
Time: *1:30 hours*  
Using Calculator: *(Yes)*

University of Palestine



final Exam  
2014/2015  
Total Grade :20

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

**Question 4:**

**(6)**

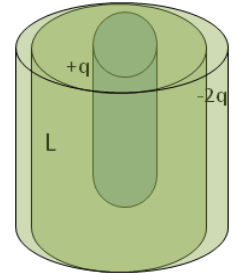
Consider a solid conducting cylinder of out surface charge  $+q$  surrounded by another conducting cylinder of net charge  $-2q$

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.



*End of Questions*

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