

Physics 02: Electricity and magnetism

University Year 2023-2024

Evaluation exam of physics 02

First Name	Last Name	Gr	Note

Exercise 1

Tick (✓) the correct answer (3 pts)

1- Like charges:

a- repel.

b- attract each other.

2- Outer electrons in conductors are:

a- weakly bound to the nuclei.

b- tightly bound to the nuclei.

3- Electric force is:

a- $F = k \frac{|q_1 \cdot q_2|}{r}$

b- $F = k \frac{|q_1 \cdot q_2|}{r^2}$

c- $F = k \frac{|q_1 \cdot q_2|}{\sqrt{r}}$

4-Gauss's theorem is :

a- $\oint_S \vec{E} \cdot d\vec{S} = \frac{Q_{enclosed}}{\epsilon_0}$

b- $\oint_L \vec{E} \cdot d\vec{L} = \frac{Q_{enclosed}}{\epsilon_0}$

c- $\oint_S \vec{E} \cdot d\vec{S} = \frac{Q_{outer}}{\epsilon_0}$

5- The electric field is zero:

a - inside the conductor.

b- outside a charged conductor.

c- just outside a charged conductor.

6- Any net charge on an isolated conductor reside:

a- on its surface.

b- inside the conductor (volume distribution).

c- on its center.

7- Charge Q on the capacitor depends:

a- on the applied difference of potential V .

b- on geometry and size of capacitor.

c- material between plates.

d- all these factors.

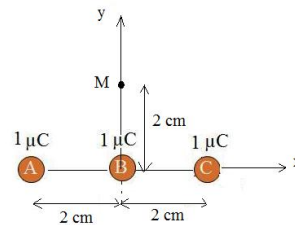
8- When n capacitors are associated in series, the equivalent capacitance is:

a- lower than the capacitance of each one of the associated capacitors.

b- greater than the capacitance of each one of the associated capacitors.

EXERCISE 02

Three same charges are placed at the points A, B and C (see fig. below). $BC=BA=2$ cm. Find and draw the net electric field at the point M due to A, B and C charges.



EXERCISE 03

A sphere of radius R has a positive charge distributed over its surface. Find the electric field and the electric potential both inside and outside the sphere. The electrical potential is zero at infinity". Plot both the electric field and electric potential.