



UNIVERSIDAD DE SAN CARLOS DE GUATEMALA
FACULTAD DE INGENIERÍA
ESCUELA DE CIENCIAS
DEPARTAMENTO DE FÍSICA

Curso: F2 R	Nota:
2S2022	
AUX. CÉSAR FERNÁNDEZ	

TAREA
HOJA DE TRABAJO
EXAMEN CORTO



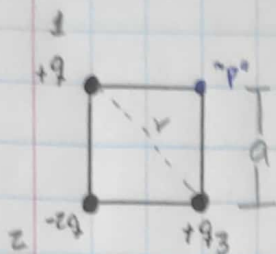
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CARNÉ:	201709088	FECHA:	02/09/2022
NOMBRE:	Leonel Antonio González García		

Exercice 2:

[1/41]



a) $a = 0.05 \text{ m}$

$q = 2 \mu\text{C}$

$r = \sqrt{a^2 + a^2}$

$r = \sqrt{2}a$

$V_P = V_1 + V_2 + V_3$

$V_P = \frac{kq_1}{a} + \frac{kq_2}{a} + \frac{kq_3}{a}$

$V_P = \frac{k}{a} (2\mu + [-2(2\mu)] + 2\mu) = \frac{k(4\mu - 4\mu)}{0.05} = 0$

$V_P = 0 //$

b) $U_{\text{stat}} = \frac{kq_1q_2}{a} + \frac{kq_1q_3}{\sqrt{2}a} + \frac{kq_2q_3}{a}$

$U_{\text{stat}} = k \left(\frac{(2\mu)(-2 \times 2\mu)}{0.05} + \frac{(2\mu)(2\mu)}{\sqrt{2}(0.05)^2} + \frac{-2(2\mu)(2\mu)}{0.05} \right) = -2.3708 \text{ J}$

$U_{\text{stat}} = -2.37 \text{ J} //$



$R = 0.4 \text{ m}$ [2/42]

$q = +26 \mu\text{C}$

d) E à $r = 0 \text{ m}$

$\oint E dA = \frac{q_{\text{enc}}}{\epsilon_0}$

$E(4\pi r^2) = \frac{q_{\text{enc}}}{\epsilon_0}$

$E = \frac{q_{\text{enc}}}{4\pi \epsilon_0 r^2} = 0$

$E = 0 //$

b) E à $r = 0.10 \text{ m}$

$E = \frac{q_{\text{enc}}}{4\pi \epsilon_0 r^2} = \frac{26\mu}{4\pi \epsilon_0 (0.1)^2} = 23.37 \times 10^6 \frac{\text{N}}{\text{C}}$

$E(4\pi r^2) = \frac{q_{\text{enc}}}{\epsilon_0}$

$E = 23.4 \times 10^6 \text{ N/C} //$

c) E à $r = 0.40 \text{ m}$

$E = 1.46 \times 10^6 \text{ N/C} //$

$E = \frac{q_{\text{enc}}}{4\pi \epsilon_0 (0.4)^2} = \frac{26\mu}{4\pi \epsilon_0 (0.4)^2} = 1.46 \times 10^6 \text{ N/C}$

d) \vec{E} a $r = 0.6 \text{ m}$.

$$E(4\pi r^2) = \frac{q_{\text{enc}}}{\epsilon_0}$$

$$E = \frac{q_{\text{enc}}}{4\pi\epsilon_0 r^2}$$

$$E = \frac{26 \mu\text{C}}{4\pi\epsilon_0 (0.6)^2}$$

$$E = 649100.06 \text{ N/C}$$

$$E = 6.5 \times 10^5 \text{ N/C.}$$