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FACULTAD DE INGENIERÍA
ESCUELA DE CIENCIAS
DEPARTAMENTO DE FÍSICA
ING. OSCAR TECUN

Física 2 P	Nota:
Junio 2022	
AUX. ANDREA GARCIA	

TAREA
HOJA DE TRABAJO
EXAMEN CORTO

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Pregunta 1:

$$r_{\text{interior}} = 5 \text{ cm}$$

$$r_{\text{exterior}} = 12 \text{ cm}$$

$$Q_r = -15 \mu\text{C}$$

$$R = 3 \text{ cm}; Q = ?$$

$$Q_{\text{ext}} = -10 \mu\text{C}$$

$$q_{\text{rint}} = Q_r - q_{\text{ext}}$$

$$q_{\text{rint}} = -15 - (-10)$$

$$q_{\text{rint}} = -5 \mu\text{C}$$

$$Q = +5 \mu\text{C}$$

$$\rho = \frac{Q}{\frac{4\pi}{3} (r)} = \frac{5 \mu\text{C}}{\frac{4\pi}{3} (0.03)^3} = 0.0442$$

1) $r = 0.07$

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

$$EA = \frac{q_{\text{enc}}}{\epsilon_0} = \frac{\rho \cdot \frac{4\pi}{3} r^3}{3\epsilon_0}$$

$$E = \frac{\rho r}{3\epsilon_0} = \frac{(0.0442)(0.07)}{3(8.85 \times 10^{-12})} = 33.29$$

2) $r = 0.08$

$$E = 0$$

Pregunta 2:

$$R = 0.2 \text{ m}$$

$$\rho = 5 \text{ n}$$

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

a)

$$E (2\pi r h) = \frac{\rho \pi R^2 h}{\epsilon_0}$$

$$E = \frac{\rho R^2}{2 r \epsilon_0} = \frac{(5 \times 10^{-9})(0.2)^2}{2(0.12)(8.85 \times 10^{-12})} = 94.16 \text{ N/C}$$

$$b) E = \frac{(5 \times 10^{-9})(0.2)}{2(8.85 \times 10^{-12})} = 56.49 \text{ N/C}$$