

General Physics II (0302102)
First Exam

20
 20
 40

Name: ياسر محمد عيسى
 Number: 0143639 (29)
 Instructor: _____

Constants: $\epsilon_0 = 8.85 \times 10^{-12} \text{ C}^2/\text{N}\cdot\text{m}^2$, $e = 1.602 \times 10^{-19} \text{ C}$, $m_e = 9.11 \times 10^{-31} \text{ kg}$,
 $k_e = 9 \times 10^9 \text{ N}\cdot\text{m}^2/\text{C}^2$

.Answer Sheet

List your final answer in this table. Only the answer in this table will be graded.

Question	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Answer	c	e	a	d	a	e	d	e	b	a

1. Three point charges, two positive and one negative, each having a magnitude of $20 \mu\text{C}$ are placed at the vertices of an equilateral triangle (50 cm on a side). What is the magnitude of the electrostatic force on the negative charge?
 (a) 69 N (b) 39 N (c) 25 N (d) 58 N (e) 85 N

2. Charge of uniform density 6.0 nC/m is distributed along the x axis from $x = -2.0 \text{ m}$ to $x = +3.0 \text{ m}$. What is the magnitude of the electric field at the point $x = +5.0 \text{ m}$ on the x axis?
 (a) 49 N/C (b) 66 N/C (c) 13 N/C (d) 16 N/C (e) 19 N/C

3. A conducting sphere of radius 10 cm is charged with a total positive charge 100 nC. What is the potential difference between two points, one located 3.0 cm away from the center and the other at the surface?
 (a) 0 V (b) 66 V (c) 57 V (d) 28 V (e) 85 V

sanfoor mohandes

4. Over a certain region of space, the electric potential is $V = 2xy - x^2z + z^3y^2$.

What is the magnitude of the electric field at the point P that has coordinates of (1.0, 2.0, -1.0) m?

- (a) 49 N/C (b) 66 N/C (c) 19 N/C ~~(d) 13 N/C~~ (e) 22 N/C

5. A charge of uniform volume density (80 nC/m^3) fills a cube with 8.0 cm edges. What is the total electric flux (in units of $\text{N}\cdot\text{m}^2/\text{C}$) through the surface of this cube?

- ~~(a) 4.6~~ (b) 1.1 (c) 5.7 ~~(d) 2.3~~ (e) 3.5

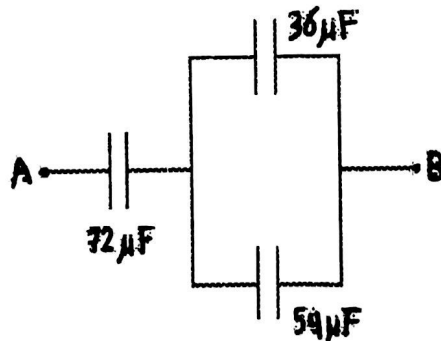
6. A long straight metal rod has a radius of 2.0 mm and a surface charge of density 0.80 nC/m^2 . Determine the magnitude of the electric field 3.0 mm from the axis.

- (a) 45 N/C (b) 30 N/C (c) 15 N/C (d) 75 N/C ~~(e) 60 N/C~~

7. The electric field (in N/C) of a point charge $q = 16 \text{ nC}$ at a point located 2.0 m from the charge is:

- (a) 27 (b) 72 (c) 18 ~~(d) 36~~ (e) 68

8. If $V_A - V_B = 50 \text{ V}$, how much energy is stored in the $54 \mu\text{F}$ capacitor?



- (a) 1.6 mJ (b) 23 mJ (c) 8.9 mJ (d) 19 mJ ~~(e) 13 mJ~~

9. Which of the following is not a capacitance? (K is the dielectric constant)

- (a) $\frac{\epsilon_0 A}{d}$ ~~(b) $\frac{k_e \epsilon_0 A}{d}$~~ (c) $\frac{ab}{k_e (b-a)}$ (d) $\frac{l}{2k_e \ln(l/a)}$ (e) $\frac{k\epsilon_0 A}{d}$

10. How much charge is on each plate of a $4.00 \mu\text{F}$ capacitor when it is connected to a 5.0 V battery?

- ~~(a) $20 \mu\text{C}$~~ (b) $77 \mu\text{C}$ (c) $48 \mu\text{C}$ (d) $68 \mu\text{C}$ (e) $32 \mu\text{C}$

power unit