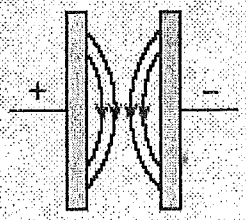
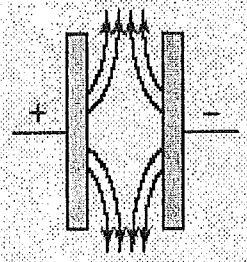
24. Which diagram best illustrates the electric field between oppositely charged parallel plates?

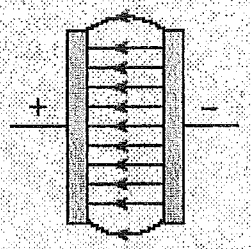
A.



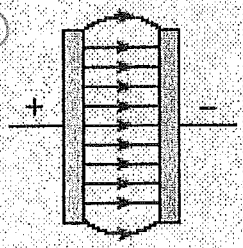
B.



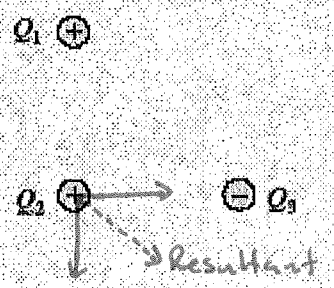
C.



D.

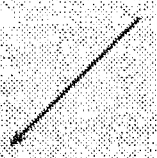


25. Three charges of identical magnitude are arranged as shown.

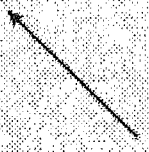


What is the direction of the electric force on Q_2?

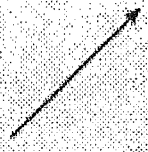
A.



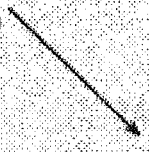
B.



C.



D.



19. The magnitude of the force experienced by any charged object, q, when placed in an electric field is equal to which of the following?

A. $\frac{V}{q}$

B. $\frac{E_p}{q}$

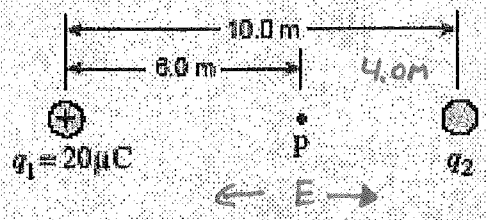
C. $\Delta V \cdot q$

D. $E \cdot q$

$E = \frac{F}{q}$

$F = Eq$

20. The electric field at point P in the diagram below is 8500 N/C directed to the right. What is the size and polarity of charge q_2? ($1\mu C = 1\times10^{-6}$ C)



	Polarity	Size
A.	+	6.2 μC
(B.)	–	6.2 μC
C.	+	14 μC
D.	–	14 μC

$E_T = E_1 + E_2$

$8500 = \frac{kq_1}{r^2} + \frac{kQ_2}{r^2}$

$8500 - \frac{kq_1}{r^2} = \frac{kQ_2}{r^2}$

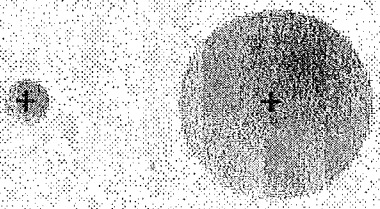
$\left(8500 - \frac{9\times10^9 \times 20\times10^{-6}}{6^2}\right)\frac{4^2}{9.0\times10^9} = Q_2$

6.2×10^{-6} C

20. The diagram below shows a positive charge located near a smaller (in magnitude) negative charge. In which region is there a point where the electric field due to the two charges is equal to zero?

A. I
B. II
C. III
(D.) IV

9. A small plastic ball carrying a positive charge is held near a fixed large positively charged sphere as shown below. It is then released. Explain how and why the acceleration of the plastic ball changes as it moves away from the sphere. (4 marks)



$F = ma$

$\frac{F}{m} = a$

$E = \frac{F}{q}$

$\frac{Eq}{m} = a$

① The strength of the E field decreases as you move away from a charge. The acceleration ① decreases because the strength of the force applied to the q decreases as the inverse square of the distance between the two charges $F = \frac{kq_1q_2}{r^2}$ ②