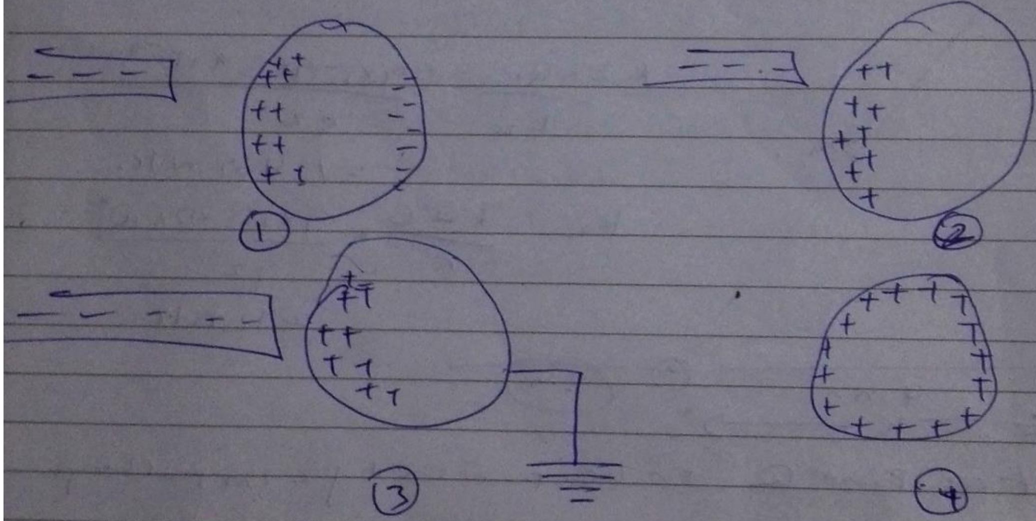
19/MHS011362. Osesmen Marvin.

① Consider a negatively charged rubber rod brought near a neutron (unchanged) conducting sphere that is insulated so that there is no conducting path to the ground as shown below. The explosive force between the electrons in the rod and those the sphere causes a redistribution of charges on the sphere so that some of the electrons move to the side of sphere farthest away from the rod.

When the rubber rod is removed from the vicinity sphere, the induced positive charge remains on the ungrounded sphere and become uniformly distributed over the surface of the sphere.



The magnitude of the resultant point Q is.

$E = \sqrt{\Sigma E x^2 + \Sigma(y^2)}$

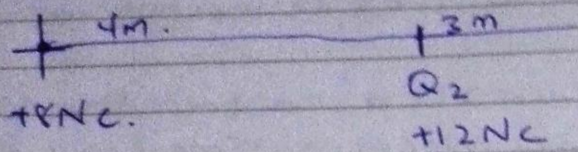
$= \sqrt{(3.46^2 + 10.592)^2}$

16.2061

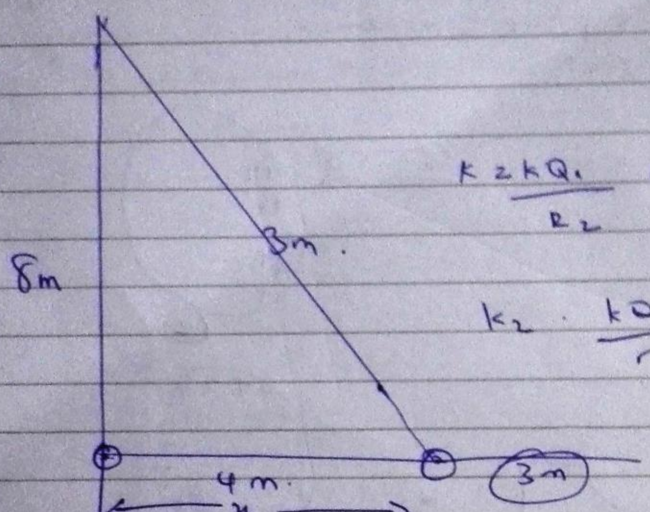
$11.14\ N/C$.

2) 15/MHS01/362.

An electric field is a region of space in which an electric charge will experience an electric force on it. Electric field intensity is the per unit charge experienced by a charge in an electric field.



2b)



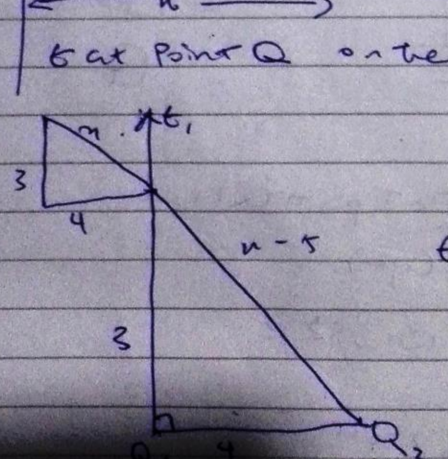
$$K = \frac{kQ_1}{R_2} = \frac{9\times10^9 \times 3\times10^{-9}}{9^2}$$

$$= 1.409\ N/c.$$

$$K_2 = \frac{kQ_2}{r} = \frac{9\times10^9 \times 12\times10^{-9}}{9^2}$$

$$= 12\ N/c$$

E at point Q on the parts city = 3m to charge.



$$E_1 = \frac{kQ_1}{r^2} = \frac{9\times10^{-9}\times 8\times10^{-9}}{3^2}$$

$$= 8\ N/c.$$

$$E_2 = \frac{kQ_2}{r^2} = \frac{9\times10^9\times12\times10^{-9}}{5^2}$$

$$= 4.32\ N/c.$$

Vector	Angle	x-component	y-component.
$E_1 = 57292.$	66.43	$E_{1x} = 57292.$ $= 58N/C$	$E_{1y} = 57552.555.8$ $= 51833.0781$
E_2 57.891	63.45		

The magnitude of the resultant of the resultant electric field

$$E_f : \sqrt{E_x^2 + E_y^2}$$

$$= \sqrt{0 + 102672.15762 + 1.0 \times 10^{-8}}$$

$$= 102672.1562 + 9.0 \times 10^{-1}.$$

Then closest $P = 0$. $(E.P = 0)$.

$0 = 10267 m \cdot 156$.

$$q = -1.14 \times 10^{-5} C$$

$$= -111 \times 10^{-6} C$$

$$= -11 \mu c.$$

19/MHS01/302.

4.) Magnetic influx is defined as the strength of a magnetic field represented by lines of force. its usually represented by the symbol ϕ

4b.) Me = 9.11×10^{-21} kg = 4×10^{-7} m $\theta = 90^{\circ}$
Magnetic field = 3.5×10^{-1} weber = 5m θ = 1

$$\omega = \frac{qB}{m}$$

$$\omega = \frac{1.6 \times 10^{-19} (3.5 \times 10^{-1})}{9^{-11} \times 10^{-4}}$$

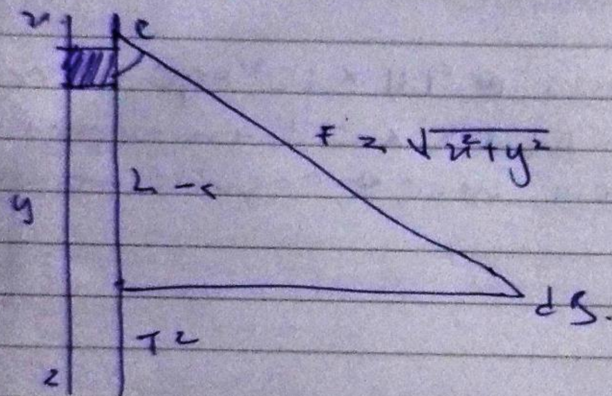
$$\omega = 6.15 \times 10^{10} \text{ rad/s.}$$

4c.) An electron of mass 9.11×10^{31} kgC in motion in a magnetic field of 3.5×10^{-1} to perpendicular with the field will have an angular frequency of 6.15×10^{10} rad/s, 5a) The vector $\vec{dB}$ is perpendicular to dl (which points) in the direction of the current and to the unit vector $\hat{r}$ directed from $\vec{dl}$ towards P.

5b) The magnitude of $\vec{dB}$ is inversely proportional to r^2 where r is the distance from dl to P.

ii) The magnitude of $\vec{dB}$ is proportional to the current I and to the current I and to the magnitude of the lenght element $\vec{dl}$

iii) The magnitude of $\vec{dB}$ is proportional to θ, where θ is the angle between P and dl.



A section of a strip carrying current

$$= \frac{\mu_0 I}{4\pi} \int \frac{dl \sin}{r^2}$$

$(\pi - \theta) = \sin$

$$\therefore B = \frac{\mu_0 I}{4\pi} \int \frac{dl \sin(\pi - \theta)}{r^2}$$

From $r^2 = x^2 + y^2$

$$\frac{\mu_0 I}{4\pi} = \frac{x}{\sqrt{x^2+y^2}} = \frac{x}{x^2+y^2} \quad \text{—— Q}$$