Have You Made Full Use of the OCR Feature?

Make a scan,enhance it and save it.Are these all the features you know about CamScanner?If so,you have missed too many cool experiences. CamScanner offers you lots of features rather than scanning.What we are sharing today is the OCR(Optical Character Recognition)feature.

What can you do with OCR feature?

1.Searching

What can you do if you want to search for a document but just can't remember the names of some docs?Use this feature to recognize all the texts on your scans.Next time you just need to enter some key words in the search box and all the documents within the words will be found.

2.Text extraction

Just purchase the one-time paid version and you can enjoy the text extraction for lifetime!Ever want to edit some texts on a paper document or a PDF file?Import it into CamScanner and all texts can be extracted as.txt file after OCR!

Why wait? Follow the steps to start using OCR!

1.Sign in to CamScanner to sync all your docs->All texts will be auto recognized after syncing.

2.If you don't want to sign in,you can open one single page of any doc->Tap the Recognize button->All recognized texts will be shown in a dialog box->Tap Share to export the texts.

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Section A

1a i) Electric field	Electric field intensity
It is a region of space in which an electric charge will experience an electric force	It is the force per unit charge

b.

$q_1 = 8nC$

$q_2 = 10nC$

$E_1 = \frac{KQ_1}{r^2} = \frac{9\times10^9 \times 8\times10^{-9}}{7^2} = 1.5N/C$

$E_2 = \frac{KQ_2}{r^2} = \frac{9\times10^9 \times 12\times10^{-9}}{7^2} = 12N/C$

$E_{net} = \vec{E_1} + \vec{E_2} = (1.5+12)\,N/C = 13.5N/C$

$E_1 = \frac{KQ_1}{r^2} = \frac{9\times10^9 \times 8\times10^{-9}}{3^2} = 8N/C$

$E_2 = \frac{KQ_2}{r^2} = \frac{9\times10^9 \times 12\times10^{-9}}{5^2} = 4.3N/C$

Vector	Angle	x comp	y comp
$E_1 = 8N/C$	$90°$	0	8
$E_2 = 4.32N/C$	$36.87°$	-3.45	2.59
		-3.45	10.59

$E_{net} = \sqrt{Efx^2 + Efy^2}$

$E_{net} = 11.12N/C$

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3 (a) : Volume charge density, $P = \frac{dQ}{dV}$ = $dQ = P\,dV$

(ii) Surface Charge density $\sigma = \frac{dQ}{dA}$ = $dQ = \sigma\, dA$

(iii) Linear charge density $\lambda = \frac{dQ}{dL}$ = $dQ = \lambda\, dL$

where Q = charge V = Volume L = Length A = area.

b) Electric potential difference.
i) due to a single point charge

$$V_B - V_A = \frac{Q}{4\pi\varepsilon_0}\left[\frac{1}{r_B} - \frac{1}{r_A}\right]$$

where q = point ch
r_B = point charg
V = distance of

3c) Point charge $Q = 10\mu C$ $Q_2 = 2\mu C$

$$V_p = \frac{1}{4\pi\varepsilon_0}\left[\frac{Q_1}{r_1} + \frac{Q_2}{r_2}\right]$$ recall $\frac{1}{4\pi\varepsilon_0} = 9\times10^9$

$$V_p = 9\times10^9\left[\frac{(10\times10^{-6})}{4+x} + \frac{(-2\times10^{-9})}{x}\right]$$

$$0 = 9\times10^{-9}\left[\frac{(10\times10^{-6})}{4+x}\right] + \frac{(-2\times10^{-6})}{x}\Big]$$

$$10\times10^{-6}x = (4+x)(2\times10^{-6})$$

$$10\times10^{-6} = 8\times10^{-6} + 2\times10^{-6}x$$

$$8\times10^{-6} = 8\times10^{-6}x$$

$$x = 1$$

∴ The position along the x-axis is 1m where V = 0.

$$V = K\left[\frac{Q_1}{r_1} + \frac{Q_2}{r_2}\right]$$

$$0 = \left[(10\times10^{-6}) + \frac{(-2\times10^{-6})}{x}\right]$$

$$8\times10^{-6} = 12\times10^{-6}x.$$

$$x = \frac{8\times10^{-6}}{12\times10^{-6}}$$ $x = 0.67m$

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Section B

1a. Magnetic flux is defined as the Strength of the magnetic field which can be represented by line of force. It is denoted by ϕ

b. $F_B = qVB = \frac{M_e V^2}{r}$

$M_e V = qBr$

$V = \frac{qBr}{M_e} = \frac{(1.6\times10^{-19})(3.5\times10^{-1})(1.4\times10^{-7})}{(9.11\times10^{-31})}$

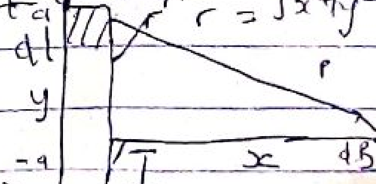
$V = 8.61\times10^{-3}\ m/s$

$w = \frac{V}{r} = \frac{qB}{m_e} = \frac{(1.6\times10^{-19})(3.5\times10^{-1})}{(9.11\times10^{-31})}$

$= 6.14\times10^{10}\ e^{-1}$

5a Bio-Sarat law ~~studies~~ States that the Magnetic field is directly proportional to the product permeability of free space (μ), the Current (I), the damage in length, the radius and ~~inversety~~ ~~p~~ inversely proportional to the square of radius

b. $B = \frac{\mu_0 I}{4a}\int_{-a}^{a} dl\ \frac{\sin\phi}{r^2}$



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

$B = \frac{\mu_0 I}{4x}\int_{-a}^{a} dl\ \frac{\sin(\pi-\phi)}{r^2}$

$r^2 = x^2 + y^2$ (from diagram)

$B = \frac{\mu_0 I}{4\pi}\int_{-a}^{a} \frac{dl\ \sin(\pi-\phi)}{x^2+y^2}$ --- (1)

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$$\sin(\pi - \phi) = \frac{x}{\sqrt{x^2+y^2}} = \frac{x}{(x^2+y^2)^{1/2}} \quad \text{---(2)}.$$

Substituting eq (1.2) into equation (1)

$$B = \frac{\mu_0 I}{4\pi} \int_{-a}^{a} dl \, \frac{x}{(x^2+y^2)(x^2+y^2)^{1/2}}$$

$$B = \frac{\mu_0 I}{4\pi} \int_{-a}^{a} dl \, \frac{x}{(x^2+y^2)^{3/2}}$$

using special integrals.

$$\int \frac{dy}{(x^2+y^2)^{3/2}} = \frac{1}{x^2}\left(\frac{y}{(x^2+y^2)^{1/2}}\right)$$

$$B = \frac{\mu_0 I}{4\pi x}\left(\frac{2a}{(x^2+a^2)^{1/2}}\right)$$

$$(x^2+a^2)^{1/2} = a \text{ as } \to \infty$$

$$\therefore B = \frac{\mu_0 I}{2\pi x}.$$