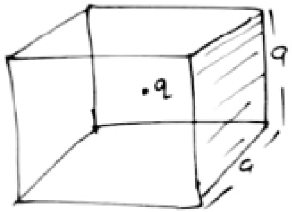
#1 - Charge placed at centre of cube



Q1) flux through the Cube:

$$\phi_T = \frac{q}{\varepsilon_0}$$

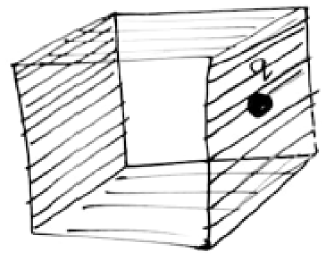
Unit - $N\text{-}m^2/C$

Q2) flux through the each side.

$$6 \text{ Side} = \frac{q}{\varepsilon_0}$$

$$1 \text{ Side} = \frac{q}{6\varepsilon_0}$$

#2) Charge placed at mid of a side of Cube.



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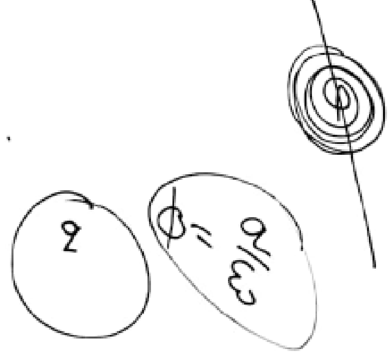
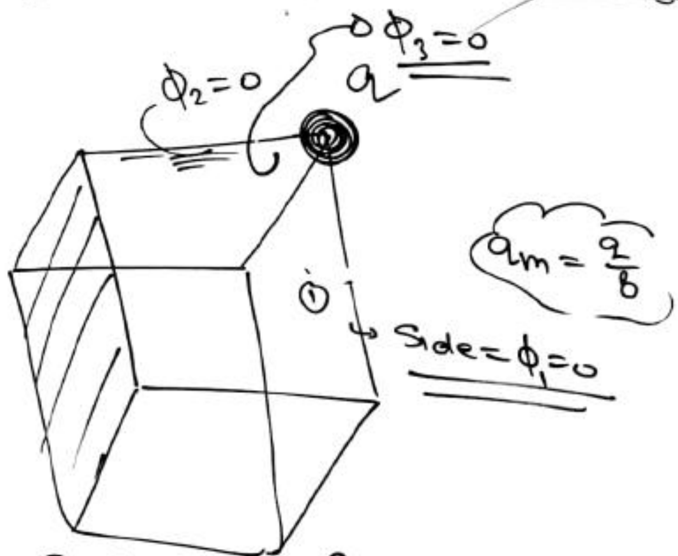
(a) find total flux through the Cube.

$$\phi = \frac{q_{in}}{\varepsilon_0} = \frac{q/2}{\varepsilon_0} = \boxed{\frac{q}{2\varepsilon_0}}$$



3:- Charge are placed at corner of Cube-:



3 Side $= \frac{q}{8\varepsilon_0}$

1 Side $= \frac{q}{24\varepsilon_0}$

(a) find flux through the cube.

$$\phi = \frac{q_{in}}{\varepsilon_0}$$

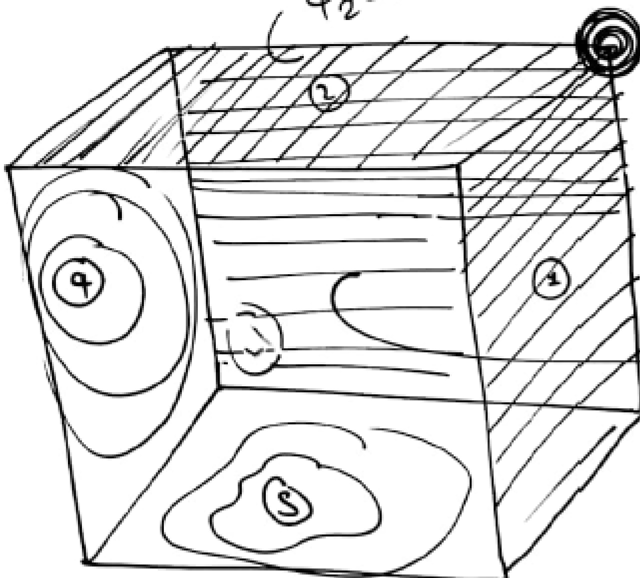
$$q_{in} = \frac{q}{8}$$

$$\phi = \frac{q}{8\varepsilon_0}$$

*→ (b) flux through shaded region.

$$\frac{q}{24\,\varepsilon_0}$$

$\phi_2 = 0$



$\Rightarrow (\phi_{Total})_{cube} = \frac{q/8}{\varepsilon_0}$

$= \frac{q}{8\varepsilon_0}$

$\phi_1 = 0$

$\phi_3 = 0$

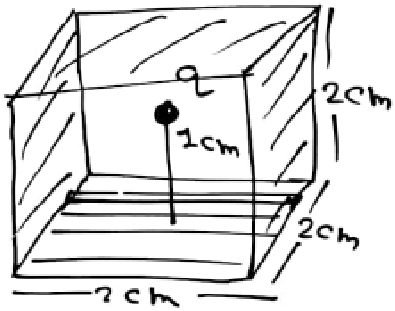
(b) ϕ through (1), (2), (3) is zero

3 Side $= \frac{q}{8\varepsilon_0}$

1 Side $= \frac{q}{8\varepsilon_0 \times 3} = \boxed{\frac{q}{24\varepsilon_0}}$

find flux through shaded region.

P/z



(a) $\frac{q}{\varepsilon_0}$

(b) $\frac{q}{6\varepsilon_0}$

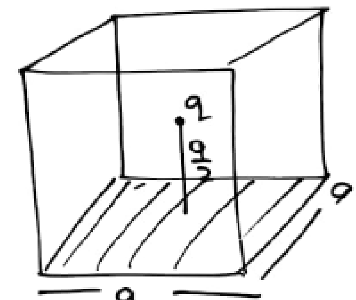
(c) $\frac{q}{2\varepsilon_0}$

(d) $\frac{q}{4\varepsilon_0}$

$6 \text{ Side} = \frac{q}{\varepsilon_0}$

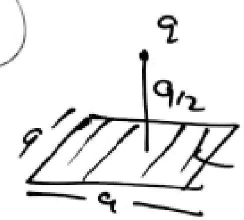
$1 \text{ Side} = \frac{q}{6\varepsilon_0}$

#



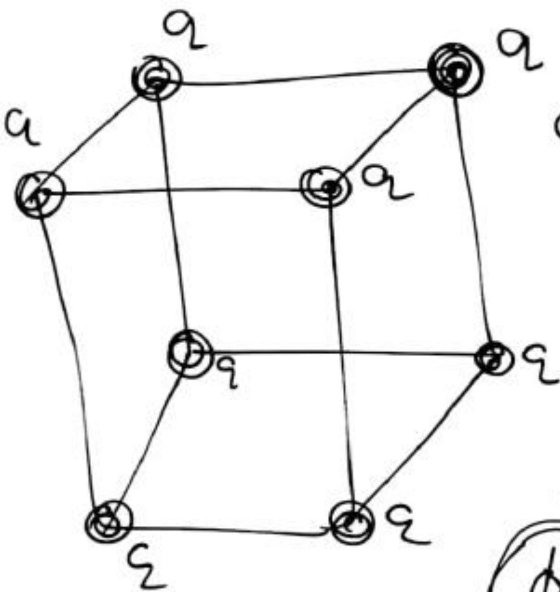
$\phi_{total} = \frac{q}{\varepsilon_0}$

$\phi_{one\,Side} = \frac{q}{6\varepsilon_0}$



$\frac{q}{6\varepsilon_0}$

Find total flux



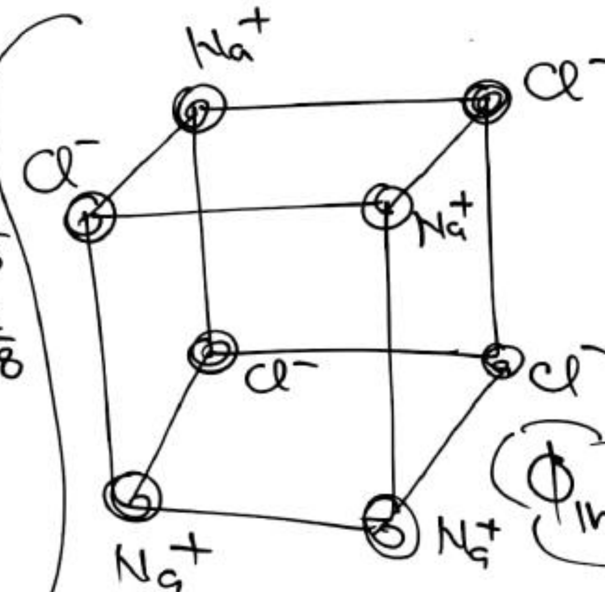
$$q_{in} = \frac{q}{8}+\frac{q}{8}+\frac{q}{8}+\frac{q}{8}+\frac{q}{8}+\frac{q}{8}+\frac{q}{8}+\frac{q}{8}$$

$$= \frac{8q}{8}$$

$$= q$$

$$q_{in} = q$$

$$\phi = \frac{q}{\varepsilon_0}$$



$$\phi_{in} = 0$$

$$\phi = 0$$

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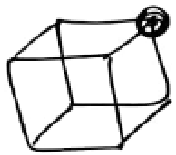
Q1) What is the flux through a cube of side a if a point charge q is at one of its corner?

(a) $\frac{2q}{\varepsilon_0}$ (b) $\frac{q}{8\varepsilon_0}$ (c) $\frac{q}{\varepsilon_0}$ (d) $\frac{q}{2\varepsilon_0}6a^2$



q_{in} the cube $= \frac{q}{8}$

$\phi = \frac{q_{in}}{\varepsilon_0} = \frac{q/8}{\varepsilon_0} = \frac{q}{8\varepsilon_0}$

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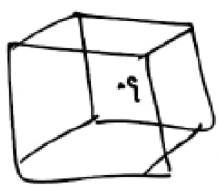
Q2) A charge Q μC is placed at the Centre of a Cube, the flux coming out from each face will be.

(a) $\frac{Q}{6\varepsilon_0}\times10^{-6}$ (b) $\frac{Q}{6\varepsilon_0}\times10^{-3}$ (c) $\frac{Q}{24\varepsilon_0}$ (d) $\frac{Q}{8\varepsilon_0}$



each side $= \frac{q_{in}}{6\varepsilon_0}$

$= \frac{Q\times10^{-6}}{6\varepsilon_0}$

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Q3) A charge Q is situated at the corner of a cube, the electric flux passing through all the six faces of the cube is

(a) $\frac{Q}{6\varepsilon_0}$ (b) $\frac{Q}{8\varepsilon_0}$ (c) $\frac{Q}{\varepsilon_0}$ (d) $\frac{Q}{2\varepsilon_0}$

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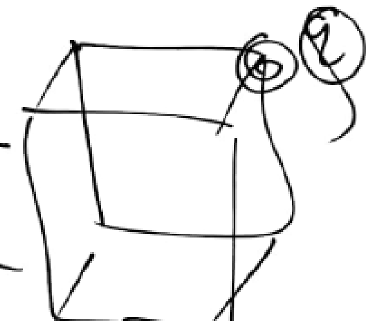
Q4)

$\frac{Q}{8\varepsilon_0}$



$q_{in} = \frac{Q}{8}$

$\phi = \frac{q_{in}}{\varepsilon_0} = \frac{Q}{8\varepsilon_0}$