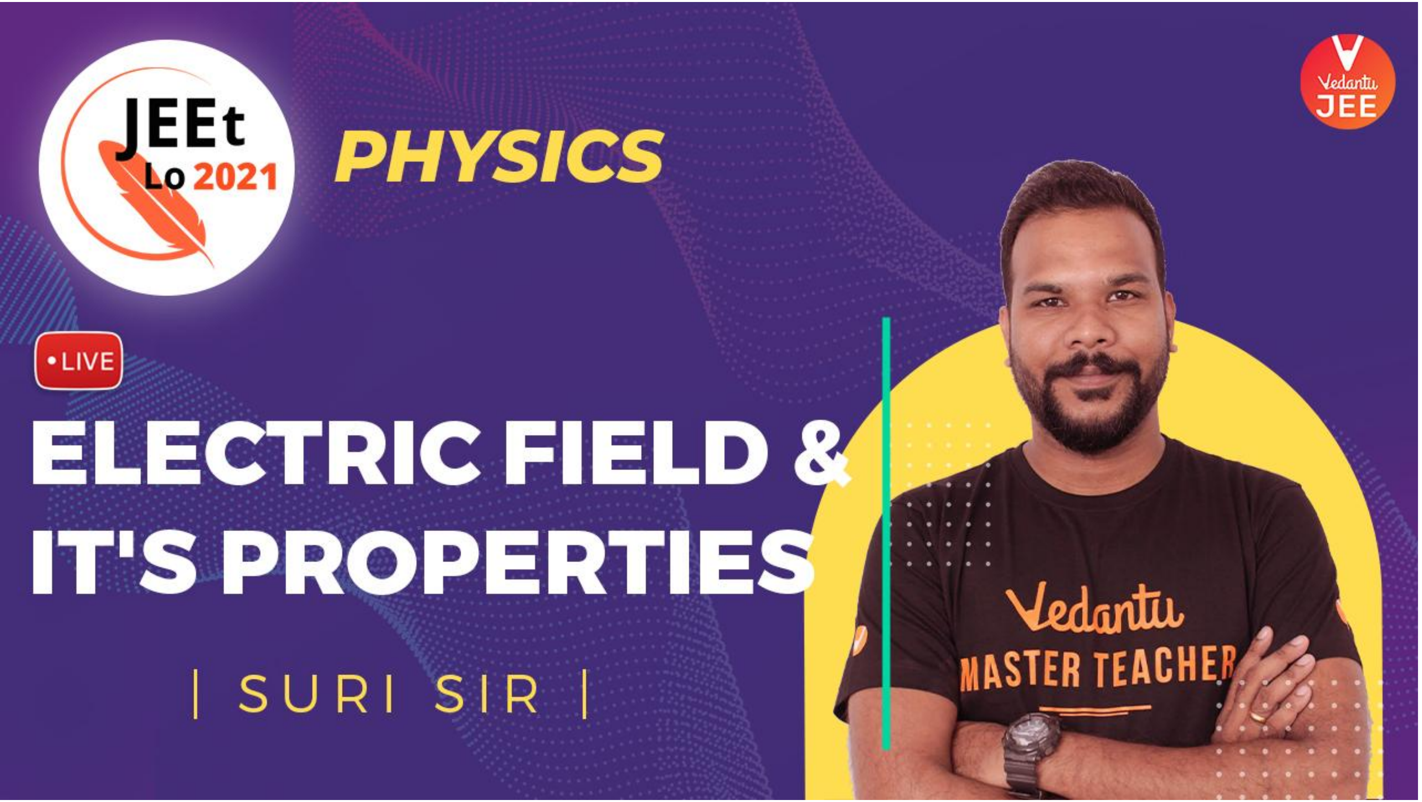
JEEt Lo 2021
PHYSICS
Vedantu JEE
• LIVE
ELECTRIC FIELD & IT'S PROPERTIES
| SURI SIR |
Vedantu
MASTER TEACHER

SURI SIR
IIT BOMBAY

ACCORDING TO PHYSICS...
THE GLASS IS NEVER EMPTY

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njoy_suri

Harsh Sir

Theory Class: Monday & Thursday (9pm)
MCQ Class: Wednesday (8pm)

Suri Sir

Theory Class: Wednesday & Saturday (9pm)
MCQ Class: Monday (8pm)

Arvind Sir

Theory Class: Tuesday & Friday (9pm)
MCQ Class: Thursday (8pm)

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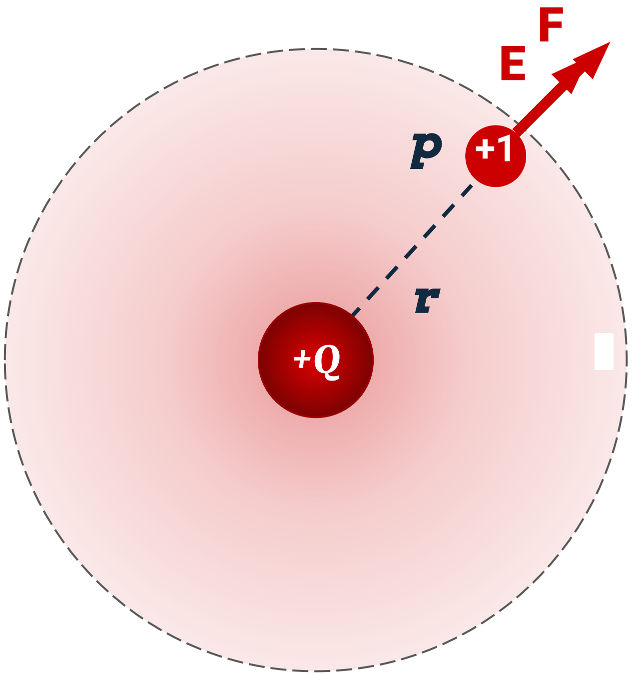
Session Plan

- Definition of Electric field
- Visualizing electric field
- Properties of Electric field lines
- Basic problems

Electric Field Of A Point Charge

Electric field at a point p is defined as the electric force experienced by unit positive charge placed at that point. In other words it is the force per unit charge.

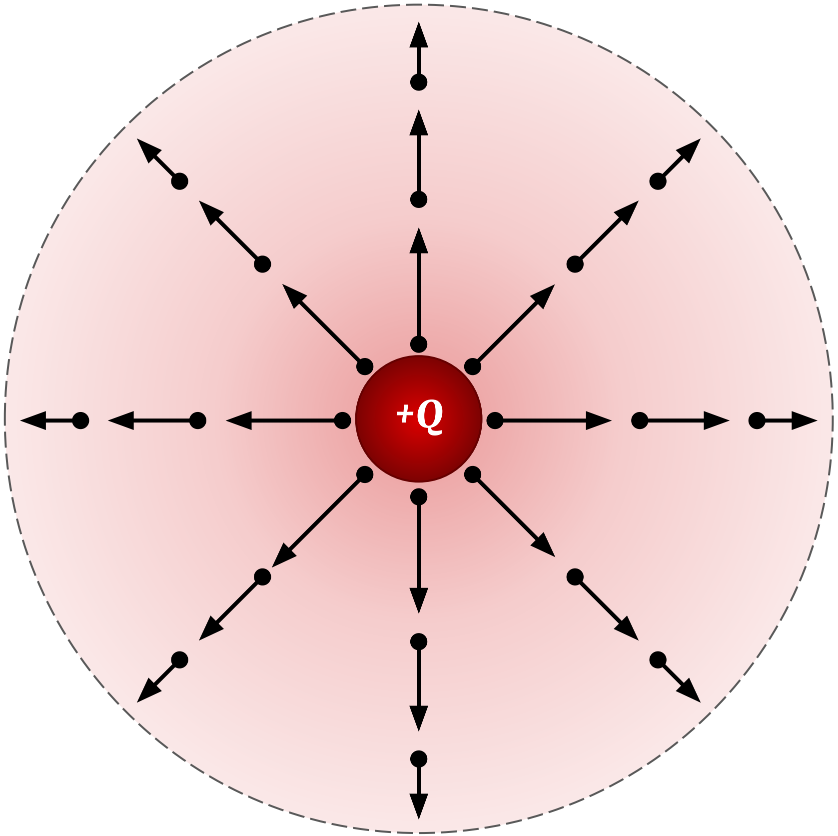


$$F = \frac{1}{4\pi\varepsilon_o} \cdot \frac{Qq}{r^2}$$

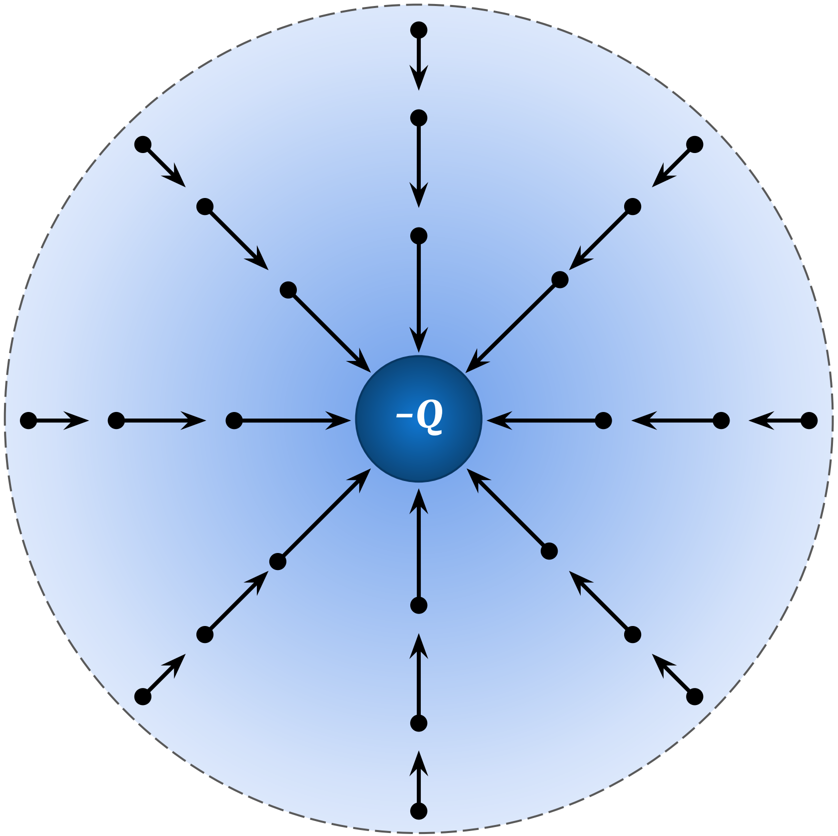
$$E = \frac{F}{q} = \frac{1}{4\pi\varepsilon_o} \cdot \frac{Q}{r^2}$$

$$E = \frac{1}{4\pi\varepsilon_o} \cdot \frac{Q(+1)}{r^2}$$

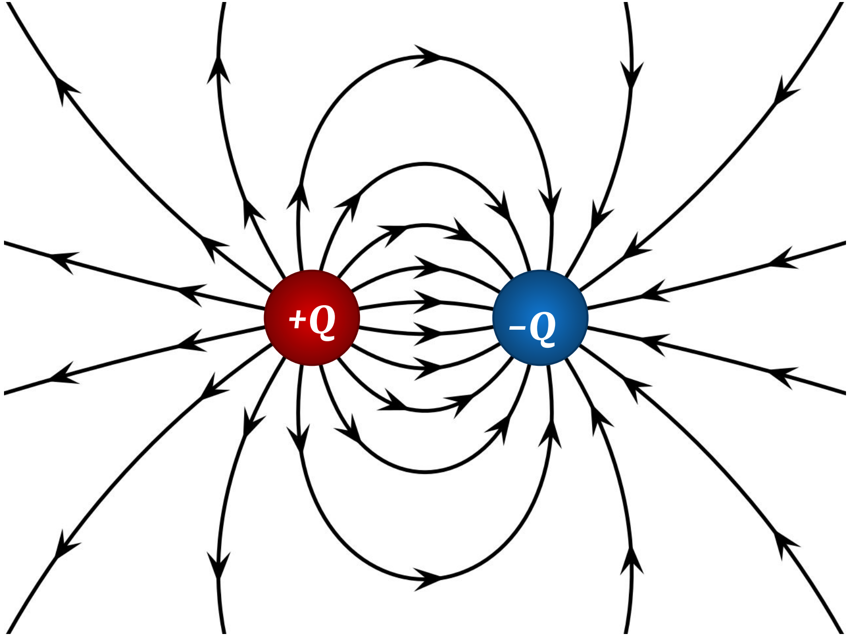
VISUALIZING ELECTRIC FIELD



VISUALIZING ELECTRIC FIELD



PROPERTIES OF ELECTRIC FIELD



- [illegible] [illegible] force [illegible] weak [illegible] direction of electric field at that point

An electron enters an electric field with its velocity in the direction of the electric lines of force. Then :

A. the path of the electron will be a circle

B. the velocity of the electron will decrease

C. the path of the electron will be a parabola

D. the velocity of the electron will increase

Q. A charged particle of mass m and charge q is released from rest in an electric field of constant magnitude E. The kinetic energy of the particle after time t is :

A $\frac{2E^2t^2}{mq}$

B $\frac{E^2q^2t^2}{2m}$

C $\frac{Eq^2m}{2t^2}$

D $\frac{Eqm}{2t}$

Q. A particle of mass m and charge q is placed at rest in a uniform field E and the released. The KE attained by the particle after moving a distance y is :

A qE^2

B qE^2y

C qEy

D q^2Ey

Q. If a proton, a deuteron and an α-particle are kept in the same electric field :

A. proton and deuteron will have the same acceleration

B. Deuteron and α-particle will have the same acceleration

C. α-particle will have the maximum acceleration

D. proton will have the minimum acceleration

Q. A tiny 0.50 gm ball carries a charge of magnitude 10 μC. It is suspended by a thread in a downward electric field of intensity 300 N/C. If the charge on the ball is positive, then the tension in the string is :

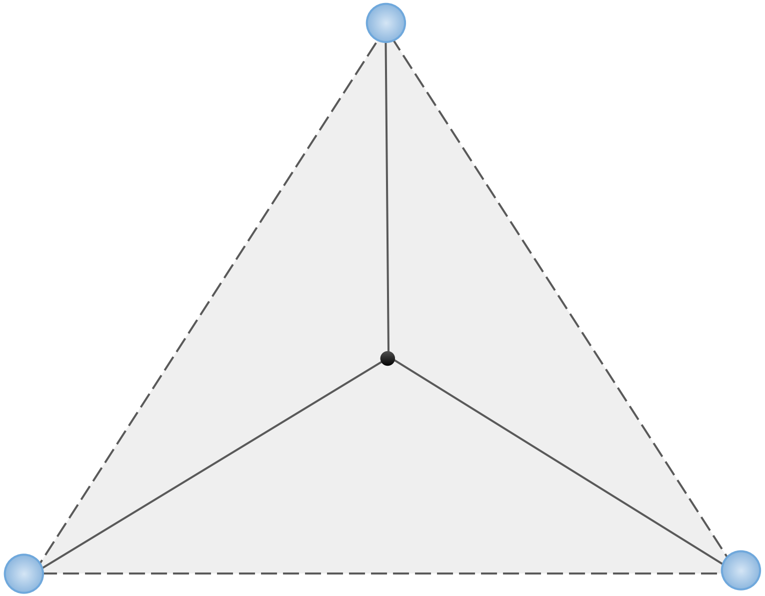
A 5×10^{-3} N

B 8×10^{-3} N

C 2×10^{-3} N

D zero

Q. Three point charges, each -q, are placed at the corners of an equilateral triangle. The magnitude of electric field at the centre will be : $\left(K = \frac{1}{4\pi\varepsilon_0}\right)$



A $3Kq/r^2$

B Kq/r^2

C $3Kq/2r^2$

D zero

Q. Two unlike charges of the same magnitude Q are placed at a distance d. The intensity of the electric field at the middle point in the line joining the two charges is :

A zero

B $\frac{8Q}{4\pi\varepsilon_0 d^2}$

C $\frac{6Q}{4\pi\varepsilon_0 d^2}$

D $\frac{4Q}{4\pi\varepsilon_0 d^2}$

Q. Two point charges +8q and -2q are located at x = 0 and x = L respectively. The location of a point (from +8q) on the x-axis at which net electric field due to these point charges is zero, is :

A 8L

B 4L

C 2L

D L/4

Q. The point charges Q and -2Q are placed at some distance apart. If the electric field at the location of Q is E, then the electric field at the location of -2Q will be :

A $-\frac{E}{2}$

B $-\frac{3E}{2}$

C -E

D -2E

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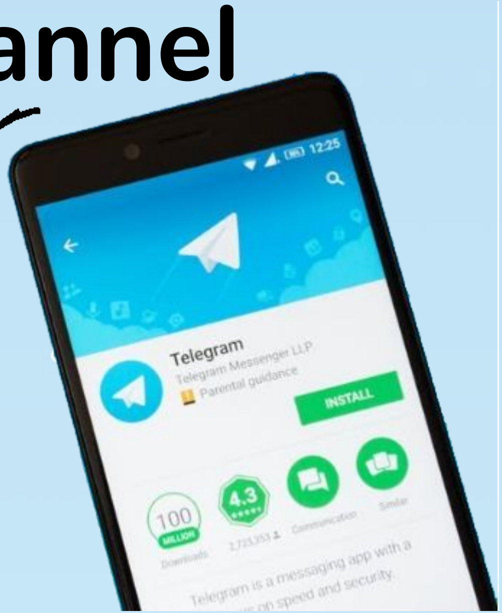
Assignments

Notes

Daily Update



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