

Physics

- 1- What orientation of an electric dipole in a uniform electric field corresponds to its stable equilibrium?
2. What is the area of the plates of a parallel plate capacitor of capacitance 2F and with separation between plates 0.5 cm?
3. What is the work done in carrying a point charge 10 nC between two points separated by a distance 5 cm on an equipotential surface?
- 4- A parallel plate capacitor is made by stacking 'n' equally spaced plates connected alternatively. If the capacitance between any two plates is 'C', determine the resultant capacitance of the combination
5. Calculate the coulomb force between two particles separated by a distance of 3.2×10^{-15} m

Class 12th (maths) H.W for 28/05/2020 (Determinant)

Properties of Determinant:

Property 1: The value of determinant remains unchanged if its row and columns are interchange

$$\Delta = \begin{vmatrix} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \\ c_1 & c_2 & c_3 \end{vmatrix} = \begin{vmatrix} a_1 & b_1 & c_1 \\ a_2 & b_2 & c_2 \\ a_3 & b_3 & c_3 \end{vmatrix}$$

Property 2: If any two rows or columns of a determinant are interchanged, then the sign of determinant changes.

$$\Delta = \begin{vmatrix} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \\ c_1 & c_2 & c_3 \end{vmatrix} = - \begin{vmatrix} b_1 & b_2 & b_3 \\ a_1 & a_2 & a_3 \\ c_1 & c_2 & c_3 \end{vmatrix}$$

Property 3: If any two rows or columns of a determinant are identical, then the value of determinant is zero

$$\Delta = \begin{vmatrix} a_1 & a_2 & a_3 \\ a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \end{vmatrix} = 0$$

Property 4: If each element of a row or a column of a determinant is multiplied by a constant K , then its value gets multiplied by K .

$$K \begin{vmatrix} a_1 & b_1 & c_1 \\ a_2 & b_2 & c_2 \\ a_3 & b_3 & c_3 \end{vmatrix} = \begin{vmatrix} Ka_1 & Kb_1 & Kc_1 \\ a_2 & b_2 & c_2 \\ a_3 & b_3 & c_3 \end{vmatrix}$$

Note: Student, write property 5 and 6 and solve Three-Three question based on each property.

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