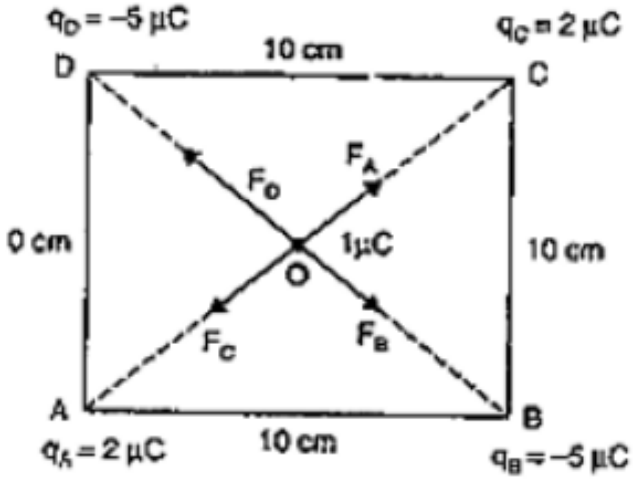
QUES 04:-

Four point charges $q_A = 2\mu C$, $q_B = -5\mu C$, $q_C = 2\mu C$ and $q_D = -5\mu C$ are located at the corners of a square ABCD of side 10 cm. What is the force on a charge of $1\mu C$ placed at the centre of the square?

Sol. Suppose a square ABCD with each side of 10 cm and centre O. At the centre, the charge of $1\mu C$ is placed.



Given: $q_A = 2\mu C$, $q_B = -5\mu C$, $q_C = 2\mu C$ and $q_D = -5\mu C$

As $q_A = q_C$, the charge of $1\mu C$ experiences equal and opposite forces F_A and F_C due to charges q_A and q_C.

At the same time, the charge $1\mu C$ experiences equal and opposite forces F_B and F_D due to equal charges q_B and q_D at B and D.

Thus, the net force on charge of $1\mu C$ due to the given charges is zero.