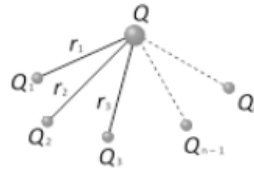


**(3) Principle of superposition :** According to the principle of super position, total force acting on a given charge due to number of charges is the vector sum of the individual forces acting on that charge due to all the charges.

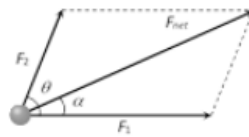


Consider number of charge  $Q_1, Q_2, Q_3 \dots$  are applying force on a charge  $Q$ .

Net force on  $Q$  will be

$$\vec{F}_{net} = \vec{F}_1 + \vec{F}_2 + \dots + \vec{F}_{n-1} + \vec{F}_n$$

The magnitude of the resultant of two electric forces is given by



$$F_{net} = \sqrt{F_1^2 + F_2^2 + 2F_1F_2 \cos \theta}$$

and 
$$\tan \alpha = \frac{F_2 \sin \theta}{F_1 + F_2 \cos \theta}$$

For problem solving remember following standard results.

