CIRCULAR MOTION

When a body moves along a circular path of radius R with a velocity v and the acceleration $\frac{v^2}{R}$ directed towards the centre then according to Newton's second law of motion, the force $f_c = \frac{mv^2}{R}$ where m is the mass of the body.

This force is directed towards the centre of the circular path and is called **centripetal force** and the acceleration $\frac{v^2}{R}$ is called **centripetal acceleration**.

The centripetal force for

(i)   a stone rotated in a circle by a string is provided by the tension in the string.

(ii)   motion of a planet around the sun is the gravitational force on the planet due to the sun.

(iii)   the circular motion of a car on a flat and banked road is provided by the force of friction.

Centrifugal force is **pseudo force** that is equal and opposite to the centripetal force. It is directed away from the centre along the radius. The centrifugal force cannot balance the centripetal force because they act on the different bodies.