QUES 04

One end of a string of length l is connected to a particle of mass m and the other to a small peg on a smooth horizontal table. If the particle moves in a circle with speed v the net force on the particle (directed towards the centre) is:

1) T
2) $\mathrm{T}-\frac{\mathrm{mv}^2}{\mathrm{l}}$
3) $\mathrm{T}+\frac{\mathrm{mv}^2}{\mathrm{l}}$
4) 0

Sol. 1) T

According to Newton's third law of motion, the net force on a rotating particle is equal to Tension in the String. As the action (ie force towards the centre) and reaction (tension in the string) are equal in magnitude and opposite in direction.