Consider a cylindrical pulley of mass M and radius R which can freely rotate about the horizontal axis passing through O. A string is tightly wound over this pulley, carrying a dead mass A at its free end. At a certain angle with respect to vertical mass A counter balances a point mass m fixed at the rim of the pulley. Calculate the frequency of small oscillations of this system.

Ans: frequency = 1/2pi root [ 2mgcos alpha / MR+2mR(1+sin alpha) ]

Please reply with explaination…