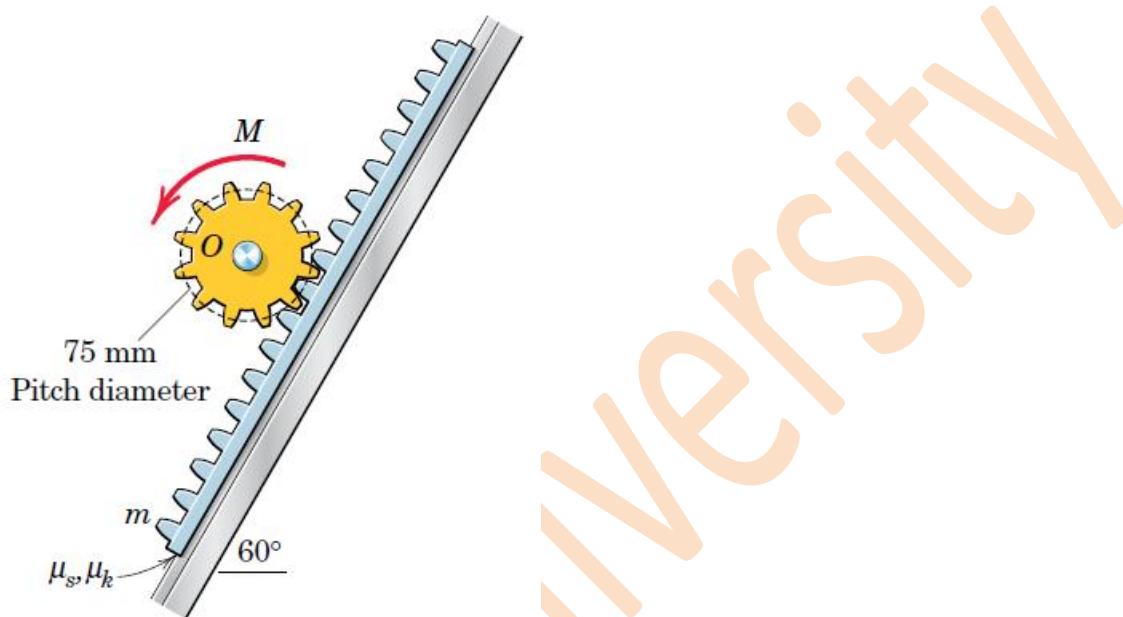


Session: 6

1. The rack has a mass $m = 75 \text{ kg}$. What moment M must be exerted by the gear wheel in order to (a) lower and (b) raise the rack at a slow steady speed on the greased 60° rail? The coefficients of static and kinetic friction are $\mu_s = 0.10$ and $\mu_k = 0.05$. The fixed motor which drives the gear wheel is not shown.



2. The uniform rod with centre of mass at G is supported by the pegs A and B , which are fixed in the wheel. If the coefficient of friction between the rod and pegs is μ , determine the angle θ through which the wheel may be slowly turned about its horizontal axis through O , starting from the position shown, before the rod begins to slip. Neglect the diameter of the rod compared with the other dimensions.

