Question#20302

250N force is required to raise 75 kg mass from a pulley.if rope is pulled 12m then load is lifted to 3m,the efficiency of pulley system will be

Solution:

Let:

$m = 75\ kg$

$H = 3\ m$

$S = 12\ m$

$F = 250\ N$

$\eta - ?$

According to the law of conservation energy:

$\frac{mg}{\eta F} = \frac{S}{H}$

$$\boldsymbol{\eta = \frac{mgH}{SF}}$$

$$\boldsymbol{\eta = \frac{75*9.8*3}{12*250} = 0.735 = 73.5\%}$$

Answer: 73.5%