Q. 06

A person of mass 60 kg wants to lose 5 kg by going up and down a 10 m high stairs. Assume he burns twice as much fat while going up than coming down. If 1 kg of fat is burnt on expending 7000 kcal calories, how many times must he go up and down to reduce his weight by 5 kg?

Sol. Here, m = 60 kg, g =10 m/s^2, h =10 m

In going up and down once, number of kilocalories burnt

$= (\mathrm{mgh} + \frac{\mathrm{mgh}}{2})$

$= \frac{3}{2}mgh$

$= \frac{3}{2} \times \frac{60 \times 10 \times 10}{4.2 \times 1000} = \frac{15}{7}$ kcal

Total number of kilocalories to be burnt for losing 5 kg of weight = 5 $\times$ 7000 = 35000 kcal

Number of times of the person has to go up and down the stairs = $\frac{35000}{15/7} = \frac{35 \times 7}{15} \times 10^3$=16.3 $\times$ 10_3 times