Answer on Question #45040, Physics, Other

Question:

An elevator weighing 2.5 10^4N is raised to a height of 10 meters. Neglecting friction, the work done is

A) 2.5 10^4 J

B) 2.5 10^5 J

C) 2.5 10^3 J

D) 7.5 10^4 J

E) 98 J

Answer:

The law of conservation of energy:

$$W = \Delta E$$

where W is work, ΔE is change of energy.

The change of elevator's energy equals:

$$\Delta E = mgh = Ph$$

where m is mass, h is height, g is acceleration due to gravity, P is weight.

Therefore:

$$W = Ph = 2.5 \cdot 10^4 \cdot 10 = 2.5 \cdot 10^5\ J$$

Answer: B) 2.5 10^5 J