A model rocket with a mass of 1.4kg is launched straight up at a speed of 43m/s. 1. What is the rocket's kinetic energy when it takes off? 2. What is the rocket's total energy when it takes off? 3. When the rocket reaches its maximum height, what is its kinetic energy?

Answer:

The rocket's total energy when it takes off contain only from kinetic energy.

The kinetic energy is:

$$E_k = \frac{1}{2}mv^2$$

When the rocket is takes off, the kinetic and total energy are: $\boldsymbol{E = E_k = \frac{1}{2}1.4 * 43^2 = 1294.3\ J}$

When the rocket reaches its maximum height the velocity is equal to zero and the kinetic energy is zero to.