Show all work for each question, including initial equations before substituting values. Your final answer(s) must be clearly marked with proper units.

*25 points possible*

1. A) (4 points) Chose 4 of the different types of energy from the following list. Describe each one including an everyday example. (Chose from: mechanical, thermal, chemical, nuclear, electromagnetic, electrical, mass (energy equivalence))

Answer:

1.

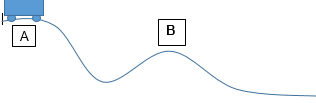
2.

3.

4.

b) (3 points) Describe one example of a transformation of one type of energy to another. Be specific about the types of energy and how they transform in your example. These must be from the energy types above (not simply potential to kinetic).

1. (7 points) Describe how potential energy, kinetic energy, and total mechanical energy transform in a roller coaster car that rolls from rest from the top of hill A to the bottom of hill B assuming no friction. Explain how this would differ if friction is included.



Answer:

1. A 0.260 kg air-track cart moving at 1.70 m/s bumps into a 0.430 kg cart at rest.
   1. (5 points) Find the total kinetic energy after collision if the collision is elastic. Show your work and explain.

Answer

* 1. (6 points) Find the final velocity of both carts and total kinetic energy after collision if the collision is completely inelastic. Show your work

Answer