2 Fig. 2.1 shows two identical trolleys, P and Q, held at rest on a frictionless horizontal surface. A load is fixed to trolley P.

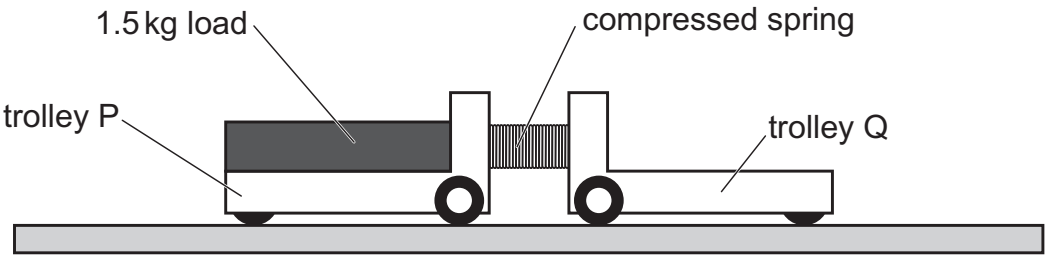

Fig. 2.1

There is a compressed spring between trolley P and trolley Q.

The trolleys are released. As the spring expands, it pushes the trolleys apart.

Trolley Q moves to the right at a constant speed of 0.36 m / s.

The mass of each trolley is 1.2 kg. The mass of the load on trolley P is 1.5 kg.

The spring has negligible mass.

(a) Calculate:

(i) the speed at which trolley P moves to the left

speed of P = ... [3]

(ii) the kinetic energy of trolley Q when it moves at 0.36 m / s.

kinetic energy of Q = ... [3]

(b) State the energy transfer that takes place as the spring expands.

.....

.....

..... [2]

[Total: 8]