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| Radioisotopes and Radiation Machines |
| Assignment 2 Part 2 |
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| **Brian Liang 100442577** |
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**Question 1:**

Assuming that no nuclear processes occur and that the collision is perfectly elastic:

The maximum energy transferred is the kinetic energy of the second object the nucleus.

Let:

Conservation of momentum:

Conservation of energy:

Dividing (2) by (1):

Subbing (3) into (1):

Subbing (4) into (3):

Rearranging for the mass of the incident particle and subbing into (5):

Squaring both sides and simplifying:

Multiplying both sides by

Thus the equation given is proven.

**Question 2:**

**Neutron Activation Equation:**

**Maximum activity occurs when**

**For a 400g sample of NaCl with M=58.44 g/mol:**