1. The CNO Bi-Cycle: The complete CNO cycle of nuclear reactions is

- (a) Fill in the blanks in the table of reactions with the missing names of the reacting particles.
- (b) One part of the bi-cycle is indicated in the reaction table. Find another catalytic cycle among the reactions and label it like the first part.
- (c) What are the *overall* reactions associated with each of the two catalytic cycles? How does the energy released in each overall reaction compare with that released in the pp chain?
- 2. Suppose we have Z protons and we have to distribute them into two nuclei, one with Z_1 protons and the other with Z_2 protons, such that $Z = Z_1 + Z_2$.
 - (a) What arrangements give the maximum and minimum Coulomb repulsion between the two nuclei?
 - (b) What does this tell you about the types of fusion most likely to take place in stars?