Name:_____KEY_____Date:_____Period:_____

Mass Defect and Binding Energy

Worksheet Key

Directions
Solve the following problems.

Mass of a proton: 1.007276 u
Mass of a neutron: 1.008665 u
1 u = 931 MeV

1. The mass of the tritium isotope, ${}^{3}_{1}\mathrm{H}$, is 3.0160490 u.
   a. What is the mass defect of this isotope? _____0.008557 u_____

   b. What is the binding energy of this isotope? ____7.97 MeV_____

2. The mass of a ${}^{12}_{6}\mathrm{C}$ nucleus is 12.00000 u.
   a. What is the mass defect of this nucleus? _____0.095646 u_____

   b. What is the binding energy of this nucleus? ___89.05 MeV_____

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3. An oxygen isotope, $^{16}_{8}O$, has a mass of 15.99491 u.
   a. What is the mass defect of this isotope?_____0.132618 u_____

   b. What is the binding energy of this isotope?_____123.5 MeV_____

4. The mass of an iron-56 nucleus is 55.92066 u.
   a. What is the mass defect of this nucleus? ___0.528466 u_____

   b. What is the binding energy of the nucleus? ___492 MeV_____

5. The binding energy of helium -4 is 28 MeV. What is the mass of a helium nucleus (round to 5 decimal places)? ___4.00181 u_____