Mass Defect & Binding Energy Worksheet

Solve the following problems.
- Mass of a proton: 1.007825 units
- Mass of a neutron: 1.008665 units
- 1 amu = 931 MeV

Match the following			
i)	The Force used to keep protons together	a)	Total binding energy
ii)	The amount of energy needed to break a nucleus into protons and neutrons is…	b)	Distance
iii)	Isotopes are …	c)	Strong Nuclear Force
iv)	Limitation of the Strong Nuclear Force	d)	Atoms of the same element that can have different masses

1. Tritium is an isotope of hydrogen. The mass of the tritium isotope, H-3, is 3.0160490 amu.
   a. What is the mass defect of this isotope?
   b. What is the binding energy of this isotope?
   c. Find the binding energy per nucleon.

2. The mass of a C-12 nucleus is 12.00000 units.
   a. What is the mass defect of this nucleus?
   b. What is the binding energy of this nucleus?
   c. Find the binding energy per nucleon.

3. An oxygen isotope, O-16 , has a mass of 15.99491 units.
   a. What is the mass defect of this isotope
   b. What is the binding energy of this isotope?
   c. Find the binding energy per nucleon.

4. The mass of an iron-56 nucleus is 55.92066 units.
   a. What is the mass defect of this nucleus?
   b. What is the binding energy of the nucleus?
   c. Find the binding energy per nucleon.

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