**What do you mean by amu? Calculate the BE in Ergs, Joule, Electron Volt and Mega Electron Volt when mass defect is 1 amu.**

**AMU (Atomic Mass Unit):** The mass of an atom is measured in terms of the atomic mass unit, which is defined to be $^1/_{12}$ of the mass of a carbon-12 atom.

So, 1 amu = 1 u = $\frac{12}{6.023 x 10^{23}}$ x $\frac{1}{12}$ = 1.6605 x $10^{-24}$ g = 1.6605 x $10^{-27}$ kg

From the Einstein's theory of special relativity we know that E= $MC^2$

So energy for 1 amu mass defect may be calculated as

BE = $\Delta$m C$^2$

Or, BE = 1.6605 x $10^{-24}$ g x (3 x $10^{10}$)$^2$ cm$^2$.sec$^{-2}$     [ C (velocity of light) = 3 x $10^{10}$ *cm/sec*

Or, BE = **14.49 x $10^{-4}$ Ergs**       or 3 x $10^8$ *m/sec , and ergs = gm.cm$^2$ sec$^{-2}$]*

*Or, BE = 14.49* x $10^{-4}$ x $10^{-7}$ *Joule = **1.49 x$10^{-10}$J***       *[1 Ergs = $10^{-7}$ Joule]*

Or, BE = *1.49 x$10^{-10}$ x (6.242x $10^{18}$) eV*       *[ J= volt x coulomb, e = 1.602x$10^{-19}$coulome]*

 Or, BE= **9.31 x$10^8$ eV**       1 eV = 1 volt x *1.602x$10^{-19}$coulome*

      *= 1.602x$10^{-19}$ J = 6.242 x$10^{18}$ eV]*

**So, BE = 931 MeV** [ 1 MeV = $10^6$ eV =1.6x$10^{-13}$J]

**[Erg:** An erg is the unit of energy and mechanical work in the centimetre–gram–second system of units, symbol "erg". Its name is derived from the Greek ergon, meaning "work". *An erg is the amount of work done by a force of one dyne exerted for a distance of one centimeter. In the CGS base units, it is equal to one gram centimeter-squared per second-squared]*