Binding Energy per nucleon for majority of elements lie in the region 7.5 to 8.0MeV'. Explain
The relationship between mass (m) and energy (E) is expressed in the following equation:
E = mc^2
"c" is the speed of light (2.998×10^8m/s)
"E"and "m" are expressed in units of joules and kilograms, respectively.
Albert Einstein first derived this relationship in 1905 as part of his special theory of relativity: the mass of a particle is directly proportional to its energy. Thus according to Equation, every mass has an associated energy. We have seen that energy changes in both chemical and nuclear reactions are accompanied by changes in mass. Einstein's equation, which allows us to interconvert mass and energy, has interesting consequence: The mass of an atom is always less than the sum of the masses of its component particles. The only exception to this rule is hydrogen-1 (1H), whose measured mass of 1.007825 amu is identical to the sum of the masses of a proton and an electron. The difference between the sum of the masses of the components and the measured atomic mass is called the mass defect of the nucleus. Just as a molecule is more stable than its isolated atoms, a nucleus is more stable (lower in energy) than its isolated components. Consequently, when isolated nucleons assemble into a stable nucleus, energy is released. According to Equation this release of energy must be accompanied by a decrease in the mass of the nucleus. The amount of energy released when a nucleus forms from its component nucleons is the nuclear binding energy. Not all nuclei are equally stable. Chemists describe the relative stability of different nuclei by comparing the binding energy per nucleon, which is obtained by dividing the nuclear binding energy by the mass number of the nucleus. The binding energy per nucleon increases rapidly with increasing atomic number until about Z = 26, where it levels off to about 8–9 MeV per nucleon and then decreases slowly. The initial increase in binding energy is not a smooth curve but exhibits sharp peaks corresponding to the light nuclei that have equal numbers of protons and neutrons (e.g., 4He, 12C, and 16O). As mentioned earlier, these are particularly stable combinations. Because the maximum binding energy per nucleon is reached at 56Fe, all other nuclei are thermodynamically unstable with regard to the formation of 56Fe. Consequently, heavier nuclei should spontaneously undergo reactions such as alpha decay, which result in a decrease in atomic number. Conversely, lighter elements should spontaneously undergo reactions that result in an increase in atomic number. This is indeed the observed pattern.

Sources:

https://chem.libretexts.org/Bookshelves/General_Chemistry/Map%3A_A_Molecular_Approach_(Tro)/20%3A_Radioactivity_and_Nuclear_Chemistry/20.08%3A_Converting_Mass_to_Energy%3A_Mass_Defect_and_Nuclear_Binding_Energy