

SL & HL Questions on The nuclear atom

1. Working sequentially from left to right identify all the missing components in each row to complete the following table.

Symbol of isotope	Number of protons	Number of electrons	Number of neutrons	Atomic number	Mass number
${}^9_4\text{Be}$					
	7	7	7		
F		10			19
		27		29	64
Br^-			44		

2. Two isotopes used in medicine are ${}^{125}\text{I}$ and ${}^{131}\text{I}$. The atomic number of iodine is 53.

i. State how they would differ in:

- (a) the number of neutrons contained in the nucleus of each isotope.
- (b) their physical properties
- (c) their chemical properties

ii. Suggest why people living near the nuclear power plant in Fukushima, which was damaged in the earthquake that hit Japan in March 2011, were given iodine tablets.

3. A mass spectrum of a naturally occurring sample of chromium gave the following information:

Relative mass of isotope	Relative amount of isotope
50.000	4.345
52.000	83.789
53.000	9.501
54.000	2.365

Determine the relative atomic mass of chromium to two decimal places.

4. The relative atomic mass of bromine is 79.91. Determine the relative percentage abundance of its two isotopes ${}^{79}\text{Br}$ and ${}^{81}\text{Br}$ to two decimal places.