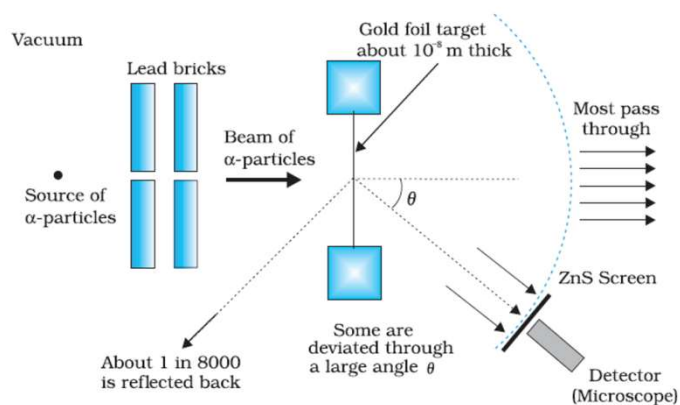

ATOMS AND NUCLEI

45. Draw a schematic arrangement of the Geiger-Marsden experiment for studying α -particle scattering by a thin foil of gold.
[All India 2009, Foreign 2010]
46. Draw the energy level diagram showing how the transitions between energy level result in the appearance of Lyman series.
[Delhi 2013]
47. Draw the energy level diagram showing how the line spectra corresponding to Paschen series occur due to transition between energy levels.
[Delhi 2013]
48. Draw the energy level diagram showing how the line spectra corresponding to Balmer series occur due to transition between energy levels.
[Delhi 2013]
49. Draw a plot of the binding energy per nucleon as a function of mass number for a large number of nuclei $20 > A > 240$.
[Foreign 2008, All India 2009C, 2010, 2013]
50. Draw a plot of potential energy between a pair of nucleons as a function of their separation. Mark the regions where potential energy is (i) positive and (ii) negative.
[Delhi 2013]
-

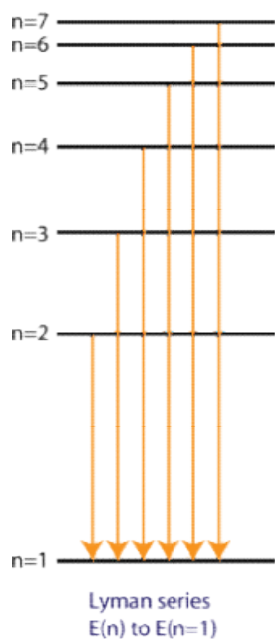


SOLUTIONS

45. Given figure shows a schematic diagram of Geiger-Marsden experiment.



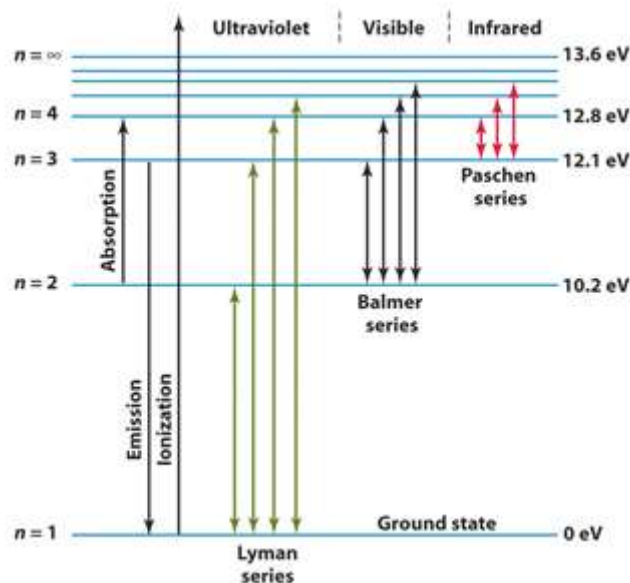
46. Energy level diagram for the Lyman series:



The Lyman series of the hydrogen atom is produced when transitions take place from higher orbit to the first orbit $n_1 = 1$

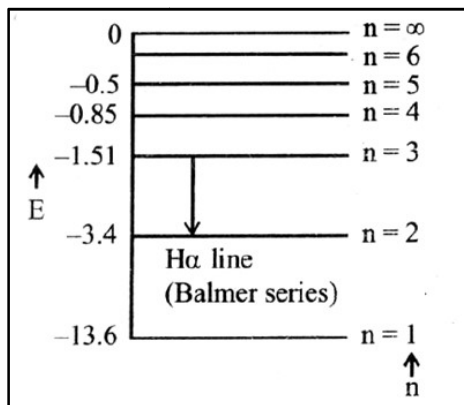


47. Energy level diagram for the Paschen series

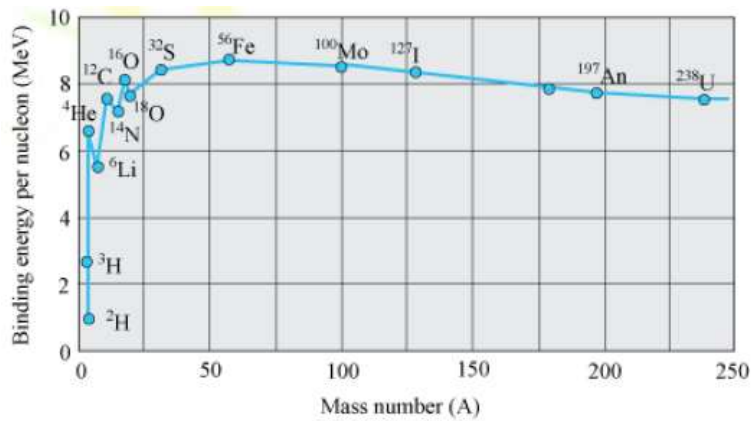


The Paschen series of the hydrogen atom is produced when transitions take place from higher orbits to the third orbit.
i.e., $n_1 = 3$ and $n_2 = 4, 5, 6, \dots$ so on.

48. Energy level diagram: The Balmer series is produced when transition take place from higher orbits to $n = 2$ as shown in the figure.



49. The binding energy per nucleon curve .



50. Plot of potential energy between a pair of nucleons as a function of their separation:

